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# THE LENGTH, AGE, AND SEX RATIO OF CHUM SALMON IN THE ALASKA PENINSULA, KODIAK ISLAND, AND PRINCE WILLIAM SOUND AREAS OF ALASKA

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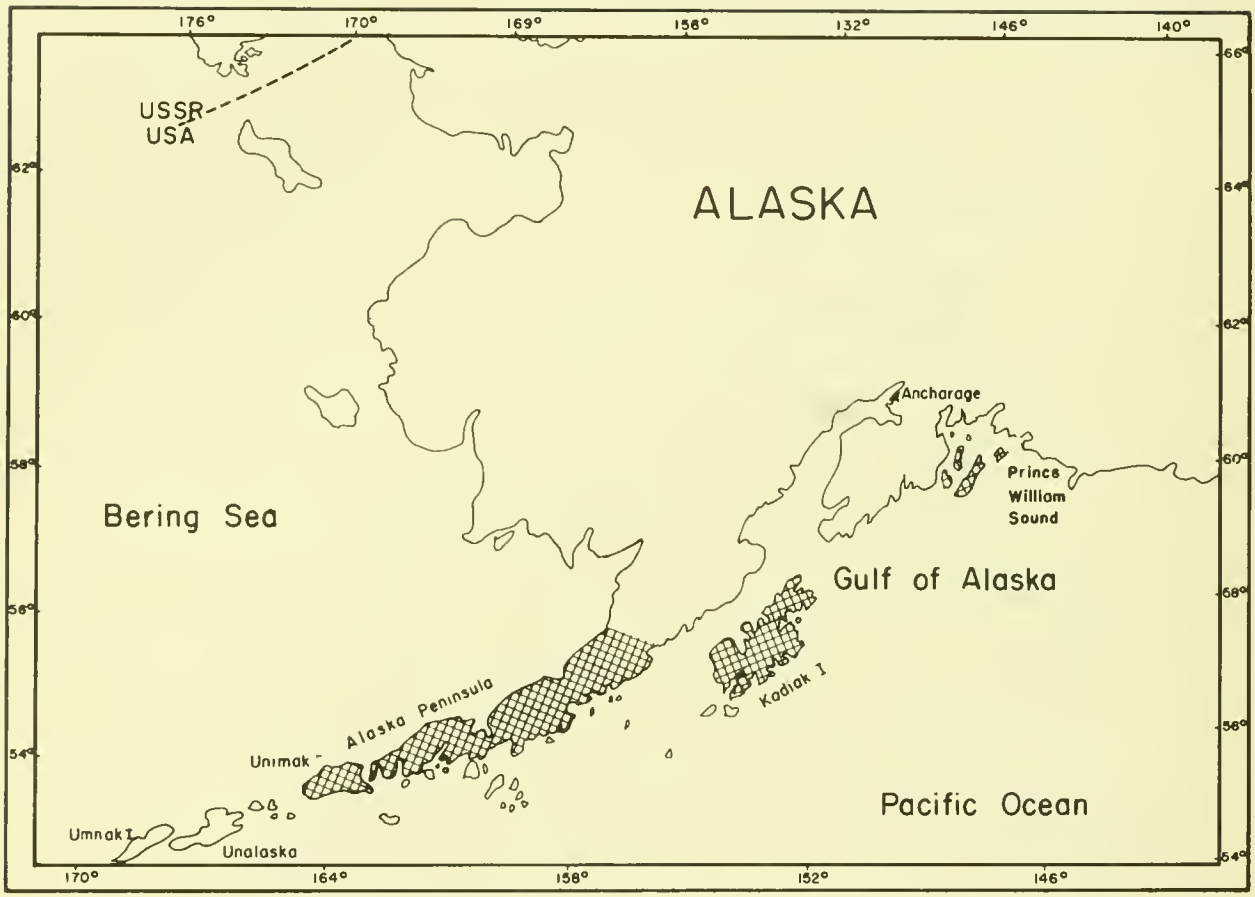


Figure 1.--Western Alaska. Data on chum salmon were collected in three cross-hatched areas from 1948 through 1958.

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## ABSTRACT

Data on length, age, and sex ratio of chum salmon from the Alaska Peninsula area from 1951 through 1957, the Kodiak Island area from 1948 through 1951 and 1955 through 1957, and the Prince William Sound area from 1952 through 1958 show that age and length composition in these areas varied in a similar manner. Lengths of fish in the 3-, 4-, and 5-year age classes overlapped to such an extent that length was not a useful guide to age. The average age composition for the combined samples was about 10 percent 3-year-olds, 75 percent 4-year-olds, and 15 percent 5-year-olds. Mean age decreased as the season advanced. The percentage of males decreased slightly as the runs progressed.

## INTRODUCTION

Chum salmon *(Oncorhynchus keta)* rank third in abundance and value in Alaska's salmon fisheries. Despite their importance, little research has been done on this species.

The Fisheries Research Institute (FRI), College of Fisheries, University of Washington, collected data on the length, age, and sex ratio of chum salmon incidental to research on other species of salmon in the Alaska Peninsula, Kodiak Island, and Prince William Sound areas between 1948 and 1958 (fig. 1). No planned program for sampling chum salmon was organized, but data were taken when chum salmon were available and when the time required for processing them did not conflict with other studies. Because of time limitations, the material was not analyzed at the end of each year, and changes in sampling techniques that might be expected to follow such analyses were not made. As a result, the data presented here are not complete or continuous, and no comprehensive analysis of the chum salmon runs to the three areas for the years when sampling was conducted is made. In spite of its limitations, this material has importance because it is the only biological information concerning past chum salmon runs in the three areas.

The objectives of this paper are to (1) present basic material collected during the several years; (2) draw tentative conclusions as to intraseasonal and interarea variability in length, age, and sex ratio; and (3) recommend methods of sampling for future studies.

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Note.--Thorsteinson presently with Bureau of Commercial Fisheries, Juneau, Alaska; Noerenberg with Alaska Department of Fish and Game, Cordova, Alaska; and Smith with Fisheries Research Board of Canada, Nanaimo, B.C.

The data discussed are from the commercial catch and the spawning grounds in the areas and years as follows:

1. Alaska Peninsula commercial catch, 1951-57.

2. Kodiak Island commercial catch, 1948-51 and 1955-57.

3. Prince William Sound commercial catch, 1952-53 and 1956-58, and spawning grounds, 1952-57.

## DATA COLLECTION

The commercial catch samples were obtained chiefly at salmon canneries, but a small number were taken on the Prince William Sound fishing grounds during tagging operations. The spawning ground samples were collected during stream surveys and tag recovery programs in Prince William Sound.

Fish sampled at the canneries were caught by traps, purse and beach seines, and gill nets. The gear type was recorded, since certain types, particularly gill nets, were probably selective for size of fish and for sex.

The length from mideye to fork of tail was determined in millimeters by one of two instruments devised by the Institute's staff for measuring salmon in the field. These are described by Duncan[1] and Thompson.[2] Both machines give a straight line measurement and avoid much of the bias inherent in simple tape measurements.

For salmon taken on the spawning grounds the mideye-fork measurement had to be replaced by a mideye to hypural plate measurement because of eroded caudal fins on many of the fish. All measurements were converted to mideye-fork length by the formula

$$Y = 1.1048\ X - 1.1052$$

where Y is the mideye-fork measurement and X the hypural plate measurement. The formula was calculated from paired measurements obtained from 228 chum salmon taken in traps on the Alaska Peninsula from June 20 to July 30, 1951.

Scales for age determination were taken from at least 20 percent of the fish measured in each sample. In small samples, proportionately more scales were taken.

Sex ratios were obtained from counts of fish as they passed along the cannery conveyor belts, or from piles of fish in the cannery bins. The number of fish used in determining sex ratios was usually more than the number measured for length. Fish in small deliveries were frequently canned before a large sample could be obtained.

## DATA ANALYSIS

Data on length, age, and sex ratio were arranged by date and locality of catch.

Length measurements, recorded to the nearest millimeter in the field, were grouped in 1-cm. intervals. Some workers began their groups with even centimeters, e.g., 570 mm.; others began them 1 mm. larger, e.g., 571 mm. Since the corresponding centimeter groups would be 570-579 and 571-580, the midpoints 574.5 and 575 fell one-half millimeter apart. This minor discrepancy was not considered in analyzing the data.

To determine age, plastic impressions suitable for microprojection were made from scales that were mounted sculptured side out on gummed cards. The procedure is outlined by Koo (in press). Most of the scales were read by Thorsteinson and Noerenberg, but a few were read by Smith and other members of the FRI staff. Agreement in scale interpretation was tested by an independent reading of a set of 200 scales by each author. Eight scales were regenerated and judged unreadable by each reader. Some disagreement existed in interpreting the scales: 15 (7.5 percent) were read as different ages by one or more readers. In view of the difficulty in establishing the position of chum salmon scale annuli (Henry, 1953), this disagreement may not be excessive. It does suggest a need for standardizing methods of interpreting chum salmon scales and investigating patterns of scales from fish of known ages.

[1]Duncan, Rea E. 1956. Two measures of the length of red salmon, *Oncorhynchus nerka* (Walbaum), their relation and application in the study of the catch and escapement in Bristol Bay, Alaska. M.S. Thesis, University of Washington, Seattle, 92 p.

[2]Thompson, William F. Report in preparation at Fisheries Research Institute.

Sex ratios were calculated as percentages.

The data, set up in standardized format, are arranged to provide the original material for analysis and reference in this report as appendixes A, B, and C. They are organized as follows:

1. A chronological tabulation of scale samples, giving each a number for convenient reference and showing the date, location of sample, gear used, and number of measurements and scale samples obtained (appendix tables A-1, B-1, C-1, C-2).

2. A map of each area showing localities where samples were taken (appendix figures A-1, B-1, C-1, C-2).

3. A frequency tabulation to the nearest half centimeter midpoint for all lengths having corresponding ages by age and sex. All fish less than 500 mm. and more than 749 mm. are grouped, because they make up insignificant numbers of the total (appendix tables A-2, B-2, C-3, C-4).

4. The sex ratio of all samples (appendix tables A-3, B-3, C-5, C-6).

In the Prince William Sound area, streams where spawning ground samples were taken are designated according to the time of their runs--early, middle, or late. Noerenberg classifies Prince William Sound streams as follows: early runs peak between July 15 and August 5, middle runs between August 6 and 20, and late runs between August 21 and September 10.[3]

Since sampling was not complete or continuous for any one year or series of years, the general relationships of length with age were studied by combining all length measurements by age classes for each area irrespective of the year, time of season, or source of the sample. In using the combined yearly data, two points were considered: types of gear used and the treatment of the spawning ground samples from Prince William Sound.

Gill nets are usually considered to be selective for size and sex. In our samples from gill nets, ages and lengths were distributed within about the same limits as in samples from traps and seines, and separating the data by type of gear did not appear justified. Usable data from the Prince William Sound commercial catch and spawning grounds were obtained in only 3 years. The mean lengths of 4-year-olds (table 1), the dominant age class, were similar; and no directional bias was evident between catch and spawning ground samples. Because of the similarity in lengths, all of the samples from Prince William Sound were used for comparisons with other areas, even though in some years samples were exclusively from the commercial catch and in some, exclusively from the spawning grounds.

In contrast to the similarity in length, the age compositions of samples from the catch and spawning grounds were not sufficiently alike to permit grouping. In table 2 age composition samples for 1952, 1953, and 1956 are combined by sex. The percentage of 3-year-olds in the catch is about three times that on the spawning grounds, and the percentage of 5-year-olds in the catch about half that on the spawning grounds. This approximate relationship prevailed in all 3 years having comparable data (appendix tables C-3 and C-4).

Changes in length composition were studied through the mean lengths of 4-year-old fish, grouped according to sex. Only 4-year-olds, the dominant age class, were studied, since changes in mean lengths of 3- and 5-year-olds varied in the same way as 4-year-olds. Changes in age composition were studied as numbers and percentages of fish occurring in the three age groups. Sex ratios were determined from entire samples.

[3]Noerenberg, W. H. 1954. Prince William Sound spawning ground survey, 1954. University of Washington, Fisheries Research Institute, Circular No. 69, 19 p. [Duplicated.]

Table 1.--Mean lengths of 4-year-old chum salmon from Prince William Sound commercial catch and spawning ground samples, 1952, 1953, and 1956

| Year | Males | | | | Females | | | |
|---|---|---|---|---|---|---|---|---|
| | Commercial catch | | Spawning grounds | | Commercial catch | | Spawning grounds | |
| | Number | Length | Number | Length | Number | Length | Number | Length |
| | | Mm. | | Mm. | | Mm. | | Mm. |
| 1952 | 158 | 652 | 128 | 632 | 212 | 637 | 152 | 629 |
| 1953 | 351 | 622 | 683 | 634 | 424 | 620 | 572 | 617 |
| 1956 | 424 | 605 | 393 | 601 | 433 | 598 | 471 | 598 |
| Mean | | 626 | | 618 | | 618 | | 615 |

Table 2.--Age composition of 3-, 4-, and 5-year-old chum salmon in Prince William Sound catch and spawning ground samples, 1952, 1953, and 1956 combined

| Sex and source | Age in years | | | | | |
|---|---|---|---|---|---|---|
| | 3 | | 4 | | 5 | |
| | Number | Percent | Number | Percent | Number | Percent |
| Males | | | | | | |
| Commercial catch | 88 | 26.0 | 227 | 67.0 | 24 | 7.0 |
| Spawning grounds | 43 | 8.7 | 367 | 74.3 | 84 | 17.0 |
| Females | | | | | | |
| Commercial catch | 39 | 11.5 | 275 | 81.4 | 24 | 7.1 |
| Spawning grounds | 11 | 2.4 | 377 | 83.4 | 64 | 14.2 |

## RESULTS AND DISCUSSION

More than 10,000 age-length determinations were made for chum salmon from the three areas. Age class 6 has not been considered in this paper because it occurs infrequently. The greatest number found in our samples amounted to 0.05 percent in the Kodiak Island area.

The most striking feature of the age-length relationship was the great overlap in the length distributions of fish in three age classes (fig. 2). Three- and five-year-old chum salmon overlapped through almost half their ranges, and 4-year-olds overlapped almost the entire range of the other two age groups. It is clear from figure 2 that length cannot be used as a reliable guide to age, or vice versa, in Alaska chum salmon.

Since there was no dependable relationship between length and age in any area, they are treated separately in the discussions of variability within seasons and between areas.

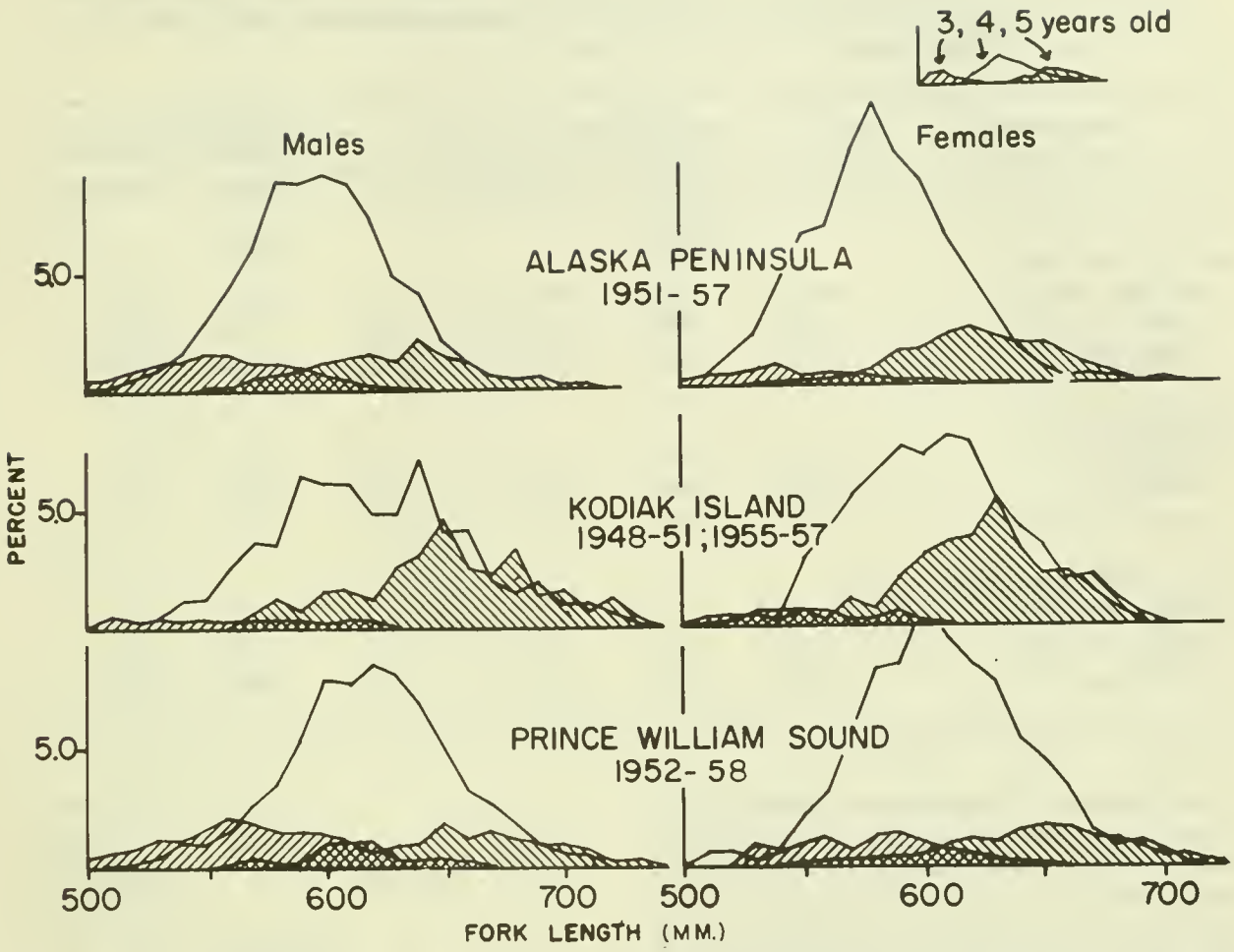


Figure 2.--Age-length relationships of 3-, 4-, and 5-year-old chum salmon in the Alaska Peninsula, Kodiak Island, and Prince William Sound areas of Alaska.

## Intraseasonal Variation

To compare the runs of the Alaska Peninsula, Kodiak Island, and Prince William Sound areas intraseasonally, fishing seasons were divided arbitrarily into three periods--before July 1, between July 1 and 15, and after July 15.

In the division by time, we assumed that fish caught before July 1 on the Alaska Peninsula (except those taken at Chignik) were bound for areas other than the Peninsula. Chum salmon are captured simultaneously with pink and red salmon in the Peninsula fishery during June. Tagging experiments (Gilbert and Rich, 1927; Thorsteinson, 1959) showed that red and pink salmon taken at that time of the season were bound for other areas. Since it is possible that early chum salmon are also bound for other areas, we felt that the data for the three periods should be kept separate.

Length.--The mean lengths and standard deviations of combined yearly samples of age class 4 from each area are shown by the three time periods in table 3. To avoid bias in years when runs of exceptionally large or exceptionally small fish were not sampled in all time periods, the data are combined for only those years when three periods were represented in the Alaska Peninsula area and two in the Kodiak Island and Prince William Sound areas.

Table 3.--Variability in size of 4-year-old chum salmon in three time periods in catch, Alaska Peninsula, 1951, 1953-57; Kodiak Island, 1949, 1955-57; Prince William Sound, 1953, 1956, 1958

| Area and time period | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | Number | Average length | Standard deviation | Number | Average length | Standard deviation |
| | | Mm. | | | Mm. | |
| Alaska Peninsula | | | | | | |
| Before July 1 | 665 | 600 | 29.0 | 677 | 570 | 25.8 |
| July 1-15 | 676 | 605 | 32.8 | 661 | 589 | 27.5 |
| After July 15 | 568 | 598 | 32.9 | 613 | 587 | 26.3 |
| Kodiak Island | | | | | | |
| Before July 1 | --- | --- | --- | --- | --- | --- |
| July 1-15 | 144 | 616 | 39.0 | 133 | 605 | 28.9 |
| After July 15 | 227 | 635 | 38.7 | 234 | 611 | 33.7 |
| Prince William Sound | | | | | | |
| Before July 1 | --- | --- | --- | --- | --- | --- |
| July 1-15 | 84 | 618 | 37.0 | 89 | 598 | 32.5 |
| After July 15 | 169 | 617 | 30.6 | 208 | 608 | 29.3 |

Mean lengths of chum salmon of both sexes in age class 4 were slightly greater in the third period in the Kodiak Island area. Means were similar in all three periods on the Peninsula--for males the range was only 7 mm. The means showed no appreciable change with time of sampling in Prince William Sound.

Age composition.--Age composition of the combined samples for all of the years is given by the three time periods in table 4 and shown graphically in figure 3. The data are so few in the first period for the Kodiak Island and Prince William Sound areas that only males from the Kodiak Island area are plotted in the figure. The age composition shifted with time: 3-year-old fish increased and 5-year-old fish decreased in relative abundance as the season progressed. Four-year-olds were dominant throughout the season and made up about three-fourths of the total run. This trend toward younger fish as the season advanced is not an artifact of combining the data. Catch data from the East Anchor Cove-Ikatan Bay and Izembek Bay areas of the Alaska Peninsula show the same sequence of shift in ages (table 5).

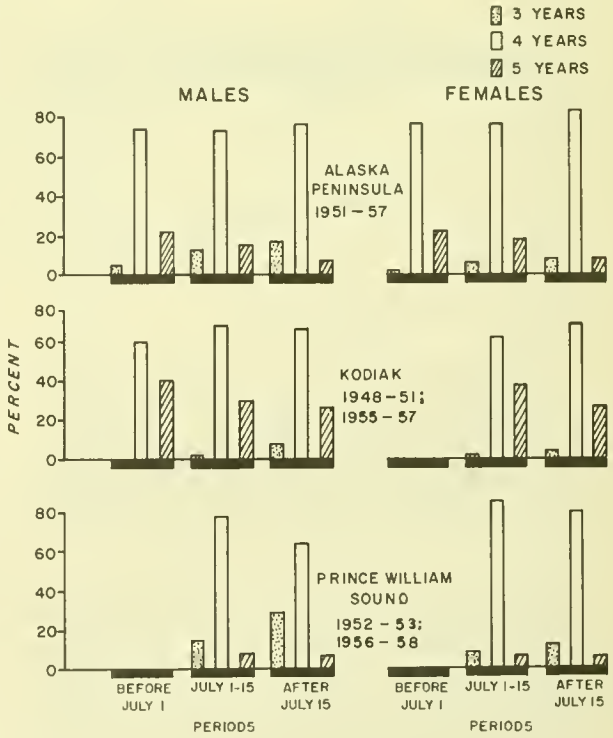


Figure 3.--Percentage 3-, 4-, and 5-year-old chum salmon in three time periods in the catch in Alaska Peninsula, Kodiak Island, and Prince William Sound areas.

Table 4.--Number and Percentage of 3-, 4-, and 5-year-old chum salmon in three time periods in catch, Alaska Peninsula, 1951-57; Kodiak Island, 1948-51, 1955-57; Prince William Sound, 1952-53, 1956-58

| Area, sex, and time period | Age in years | | | | | |
|---|---|---|---|---|---|---|
| | 3 | | 4 | | 5 | |
| | Number | Percent | Number | Percent | Number | Percent |
| Alaska Peninsula | | | | | | |
| Males | | | | | | |
| Before July 1 | 62 | 5.3 | 874 | 74.2 | 242 | 20.5 |
| July 1-15 | 116 | 12.5 | 676 | 72.9 | 135 | 14.6 |
| After July 15 | 140 | 17.2 | 618 | 75.8 | 57 | 7.0 |
| Females | | | | | | |
| Before July 1 | 15 | 1.3 | 857 | 77.0 | 242 | 21.7 |
| July 1-15 | 49 | 5.6 | 662 | 75.8 | 162 | 18.6 |
| After July 15 | 58 | 7.0 | 698 | 84.9 | 67 | 8.1 |
| Kodiak Island | | | | | | |
| Males | | | | | | |
| Before July 1 | 0 | 0 | 6 | 60.0 | 4 | 40.0 |
| July 1-15 | 3 | 1.4 | 144 | 68.3 | 64 | 30.3 |
| After July 15 | 54 | 7.9 | 455 | 66.5 | 175 | 25.6 |
| Females | | | | | | |
| Before July 1 | 0 | 0 | 5 | 100.0 | 0 | 0 |
| July 1-15 | 1 | 0.5 | 133 | 62.7 | 78 | 36.8 |
| After July 15 | 24 | 3.8 | 436 | 69.1 | 171 | 27.1 |
| Prince William Sound | | | | | | |
| Males | | | | | | |
| Before July 1 | --- | --- | --- | --- | --- | --- |
| July 1-15 | 17 | 15.4 | 84 | 76.4 | 9 | 8.2 |
| After July 15 | 93 | 28.8 | 206 | 63.8 | 24 | 7.4 |
| Females | | | | | | |
| Before July 1 | 0 | 0 | 4 | 100.0 | 0 | 0 |
| July 1-15 | 9 | 8.6 | 89 | 84.7 | 7 | 6.7 |
| After July 15 | 40 | 12.8 | 251 | 80.2 | 22 | 7.0 |

This same situation is paralleled on the Prince William Sound spawning grounds. Helle (1960)[4] compared early and late spawning runs and found that in both, fish in age class 5 were most abundant in the initial stages of the runs, and fish in age class 3 became more abundant as the season of the runs advanced.

[4] Helle, John Harold. 1960. Characteristics and structure of early and late spawning runs of chum salmon, *Oncorhynchus keta* (Walbaum), in streams of Prince William Sound, Alaska. M.S. Thesis, University of Idaho, 53 p.

Sex ratio.--The sex ratio is shown by time periods in table 6. It was in favor of males early in the season and decreased slightly as the season progressed. The situation was the same in all three areas, although data taken before July 1 in the Kodiak Island and Prince William Sound areas are too few to be dependable.

## Interarea Variability

Length.--In figure 4 the mean lengths of age classes 3, 4, and 5 are plotted by area to permit an evaluation of length with age. The

Table 5.--Number and percentage of 3-, 4-, and 5-year-old chum salmon in three time periods in catch, East Anchor Cove-Ikatan Bay, 1951, 1952-57; Izembek Bay, 1955-57

| Area, sex, and time period | Age in years | | | | | |
|---|---|---|---|---|---|---|
| | 3 | | 4 | | 5 | |
| | Number | Percent | Number | Percent | Number | Percent |
| East Anchor Cove-Ikatan Bay | | | | | | |
| Males | | | | | | |
| Before July 1 | 32 | 8.3 | 278 | 72.4 | 74 | 19.3 |
| July 1-15 | 88 | 24.0 | 233 | 63.5 | 46 | 12.5 |
| After July 15 | 15 | 26.8 | 34 | 60.7 | 7 | 12.5 |
| Females | | | | | | |
| Before July 1 | 7 | 2.1 | 282 | 83.2 | 50 | 14.7 |
| July 1-15 | 35 | 11.4 | 216 | 70.4 | 56 | 18.2 |
| After July 15 | 8 | 15.4 | 42 | 80.8 | 2 | 3.8 |
| Izembek Bay | | | | | | |
| Males | | | | | | |
| Before July 1 | 1 | 1.8 | 53 | 94.6 | 2 | 3.6 |
| July 1-15 | 10 | 3.1 | 278 | 85.8 | 36 | 11.1 |
| After July 15 | 31 | 8.4 | 315 | 84.9 | 25 | 6.7 |
| Females | | | | | | |
| Before July 1 | 0 | 0 | 48 | 88.9 | 6 | 11.1 |
| July 1-15 | 8 | 2.4 | 279 | 85.4 | 40 | 12.2 |
| After July 15 | 10 | 2.6 | 343 | 90.3 | 27 | 7.1 |

Table 6.--Sex ratio of chum salmon in three time periods, Alaska Peninsula, 1951-57; Kodiak Island, 1948-51, 1955-57; Prince William Sound, 1952-58

| Area and time period | Males | | Females | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Alaska Peninsula | | | | |
| Before July 1 | 1,634 | 53.0 | 1,446 | 47.0 |
| July 1-15 | 2,392 | 53.0 | 2,081 | 47.0 |
| After July 15 | 2,446 | 52.0 | 2,255 | 48.0 |
| Kodiak Island | | | | |
| Before July 1 | 70 | 70.0 | 30 | 30.0 |
| July 1-15 | 400 | 52.0 | 373 | 48.0 |
| After July 15 | 1,415 | 49.0 | 1,462 | 51.0 |
| Prince William Sound | | | | |
| Before July 1 | 5 | --- | 4 | --- |
| July 1-15 | 416 | 49.0 | 427 | 51.0 |
| After July 15 | 1,025 | 45.0 | 1,252 | 55.0 |

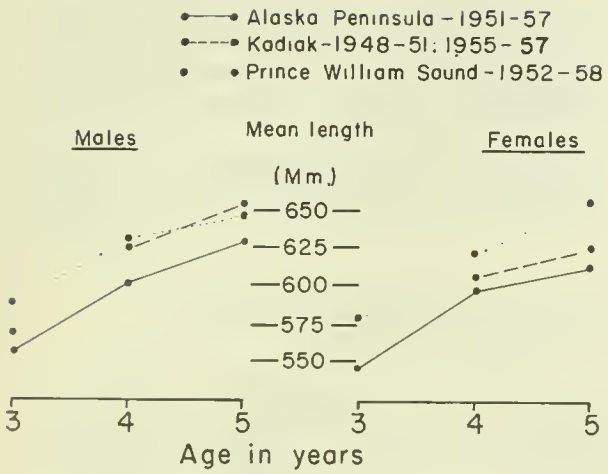


Figure 4.--Mean lengths of chum salmon in Alaska Peninsula, Kodiak Island, and Prince William Sound areas by age and sex (points are unweighted means).

points are unweighted means calculated from table 7. The figure shows that despite the inconsistency of the sources of the yearly data, the basic relationships of size with age prevailed in all areas. Age class 3 females from the Kodiak Island area were too few to use. Mean lengths increased from west to east: Alaska Peninsula chum salmon were smallest and Prince William Sound chum salmon largest.

In table 7 the numbers of fish in each age class, average lengths, and standard deviations for each sample are shown for the three areas for the years 1948-58. Age classes containing fewer than 10 fish were not used in the calculations.

Lengths in each age class varied little from one year to the next, the greatest variation occurring in males in age class 4 from the Kodiak Island area; in 1955 males were 70 mm. (almost 3 inches) larger than those in 1948. In any year fish of the same age class tended to be relatively the same length. Even though fish of different ages were exposed to different growing conditions during their life in the ocean, they all tended to be relatively large or relatively small at maturity. For example, in 1952 average lengths were greater than the long-term mean, and in 1956, except for females in age class 4 in the Kodiak Island area, they were smaller.

Age composition.--The age composition of samples combined by years for each area is shown in table 8. All age data are grouped to give an average value for age composition of chum salmon in the general region under consideration. Age class structure of chum salmon of the central and western part of Alaska averaged about 10 percent 3-year-olds, 75 percent 4-year-olds, and 15 percent 5-year-olds. The percentages were fairly consistent from year to year.

Age composition for the Kodiak Island area varied from that for the Alaska Peninsula and Prince William Sound areas. In the Kodiak Island area about 27 percent of the fish in the samples were in age class 5, which was about twice the percentage of age class 5 fish in the other two areas. Fish in age class 3, on the other hand, formed a greater proportion of the Prince William Sound and Alaska Peninsula runs than they did of the Kodiak Island area runs. When year-to-year changes were inspected with regard to the long-term mean age composition, it appeared that all three areas tended to vary in the same direction at the same time. For instance, in the Alaska Peninsula and Prince William Sound areas, low percentages of 4-year-olds were found in 1952. In 1956 in all three areas, high percentages of 4-year-olds were taken.

Sex ratio.--Sex ratio by area and by year are given in appendix tables A-3, B-3, C-5, and C-6. Differences in the percentage of males from place to place were negligible.

## RECOMMENDATIONS

During the analysis we found that because of the inconsistency of collecting data by locality of sampling, season of the fishery, or stage of the spawning migrations, only general conclusions could be drawn about chum salmon in the various areas. More precise estimates of parameters of length, age composition, and sex ratio, as well as other biological statistics, are needed. With reference to the characters measured during this study, we recommend the following for future work:

1. Since the age composition in the fishery and the spawning migration does change during the season, samples should be taken from both at regular and frequent intervals.

2. If a program is to continue over a period of more than 1 year, sampling should be done in the same localities and the same time periods each year.

3. Larger scale samples than are customarily taken for determining age in other species of salmon are required.

4. To eliminate the task of converting length measurements, a single measurement, such as mideye to hypural plate, should be taken in both fresh- and salt-water samples.

5. In view of the difficulty in interpreting age from chum salmon scales, the problem should be reviewed and methods standardized.

Table 7.--Length statistics of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas

| Area, year, and age of fish (years) | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | Number | Average length | Standard deviation | Number | Average length | Standard deviation |
| | | Mm. | | | Mm. | |
| Alaska Peninsula | | | | | | |
| 1951 | | | | | | |
| 3 | 14 | 550 | 29.6 | 7 | --- | --- |
| 4 | 44 | 589 | 35.2 | 43 | 582 | 34.3 |
| 5 | 16 | 633 | 35.8 | 20 | 592 | 29.2 |
| 1952 | | | | | | |
| 3 | 56 | 564 | 37.6 | 20 | 557 | 26.5 |
| 4 | 50 | 612 | 39.3 | 85 | 599 | 30.1 |
| 5 | 8 | --- | --- | 11 | 625 | 28.4 |
| 1953 | | | | | | |
| 3 | 55 | 581 | 35.6 | 48 | 581 | 34.8 |
| 4 | 184 | 607 | 34.6 | 192 | 581 | 31.7 |
| 5 | 34 | 631 | 35.9 | 38 | 605 | 35.1 |
| 1954 | | | | | | |
| 3 | 183 | 567 | 28.7 | 45 | 550 | 24.6 |
| 4 | 840 | 611 | 32.7 | 845 | 597 | 30.7 |
| 5 | 225 | 640 | 36.4 | 265 | 627 | 27.4 |
| 1955 | | | | | | |
| 3 | 30 | 536 | 24.7 | 10 | 530 | 24.8 |
| 4 | 224 | 604 | 30.1 | 238 | 582 | 27.3 |
| 5 | 28 | 630 | 35.8 | 31 | 609 | 23.0 |
| 1956 | | | | | | |
| 3 | 41 | 546 | 27.7 | 19 | 540 | 22.0 |
| 4 | 716 | 592 | 26.8 | 737 | 578 | 24.2 |
| 5 | 35 | 624 | 23.6 | 31 | 603 | 24.9 |
| 1957 | | | | | | |
| 3 | 28 | 558 | 25.1 | 14 | 533 | 21.2 |
| 4 | 205 | 605 | 32.8 | 213 | 584 | 27.0 |
| 5 | 106 | 624 | 28.7 | 101 | 607 | 30.7 |
| Unweighted average length (all years) | | | | | | |
| 3 | | 557.4 | | | 548.5 | |
| 4 | | 602.9 | | | 586.0 | |
| 5 | | 630.3 | | | 609.7 | |

Table 7.--Length statistics of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas--continued

| Area, year, and age of fish (years) | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | Number | Average length | Standard deviation | Number | Average length | Standard deviation |
| | | Mm. | | | Mm. | |
| Kodiak Island | | | | | | |
| 1948 | | | | | | |
| 3 | 14 | 571 | 38.5 | 8 | --- | --- |
| 4 | 63 | 596 | 32.1 | 69 | 594 | 29.0 |
| 5 | 36 | 647 | 37.0 | 42 | 622 | 36.4 |
| 1949 | | | | | | |
| 3 | 2 | --- | --- | 3 | --- | --- |
| 4 | 99 | 603 | 31.2 | 110 | 588 | 30.4 |
| 5 | 62 | 631 | 36.5 | 40 | 609 | 27.0 |
| 1950 | | | | | | |
| 3 | 1 | --- | --- | 2 | --- | --- |
| 4 | 38 | 617 | 35.1 | 37 | 598 | 28.6 |
| 5 | 18 | 652 | 31.0 | 17 | 628 | 14.5 |
| 1951 | | | | | | |
| 3 | 1 | --- | --- | 1 | --- | --- |
| 4 | 11 | 651 | 36.8 | 4 | --- | --- |
| 5 | 7 | --- | --- | 11 | 615 | 26.9 |
| 1955 | | | | | | |
| 3 | 4 | --- | --- | 0 | --- | --- |
| 4 | 81 | 666 | 35.4 | 86 | 634 | 26.1 |
| 5 | 61 | 681 | 28.4 | 82 | 648 | 24.9 |
| 1956 | | | | | | |
| 3 | 1 | --- | --- | 1 | --- | --- |
| 4 | 33 | 612 | 30.6 | 33 | 610 | 24.0 |
| 5 | 4 | --- | --- | 3 | --- | --- |
| 1957 | | | | | | |
| 3 | 6 | --- | --- | 0 | --- | --- |
| 4 | 120 | 630 | 32.9 | 101 | 614 | 25.3 |
| 5 | 24 | 663 | 29.4 | 32 | 623 | 28.0 |
| Unweighted average length (all years) | | | | | | |
| 3 | | 571 | | | --- | |
| 4 | | 625.0 | | | 606.3 | |
| 5 | | 654.8 | | | 624.2 | |

Table 7.--Length statistics of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas--continued

| Area, year, and age of fish (years) | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | Number | Average length | Standard deviation | Number | Average length | Standard deviation |
| | | Mm. | | | Mm. | |
| Prince William Sound | | | | | | |
| 1952 | | | | | | |
| 3 | 27 | 606 | 20.9 | 17 | 593 | 16.4 |
| 4 | 47 | 644 | 27.3 | 41 | 634 | 28.0 |
| 5 | 22 | 681 | 23.4 | 32 | 669 | 27.9 |
| 1953 | | | | | | |
| 3 | 50 | 565 | 32.1 | 19 | 581 | 23.7 |
| 4 | 300 | 634 | 32.6 | 325 | 618 | 28.4 |
| 5 | 74 | 653 | 33.8 | 50 | 651 | 27.5 |
| 1954 | | | | | | |
| 3 | 29 | 569 | 29.5 | 15 | 575 | 21.2 |
| 4 | 20 | 647 | 39.2 | 25 | 625 | 40.4 |
| 5 | 7 | --- | --- | 3 | --- | --- |
| 1955 | | | | | | |
| 3 | 4 | --- | --- | 2 | --- | --- |
| 4 | 22 | 638 | 36.1 | 23 | 629 | 22.3 |
| 5 | 2 | --- | --- | 2 | --- | --- |
| 1956 | | | | | | |
| 3 | 53 | 564 | 31.6 | 14 | 573 | 25.5 |
| 4 | 245 | 601 | 29.9 | 288 | 598 | 29.9 |
| 5 | 11 | 633 | 42.8 | 5 | --- | --- |
| 1957 | | | | | | |
| 3 | 12 | 623 | 40.6 | 3 | --- | --- |
| 4 | 77 | 625 | 30.3 | 80 | 623 | 42.3 |
| 5 | 20 | 628 | 31.8 | 24 | 647 | 33.4 |
| 1958 | | | | | | |
| 3 | 14 | 597 | 26.6 | 8 | --- | --- |
| 4 | 54 | 629 | 30.4 | 53 | 612 | 30.7 |
| 5 | 7 | --- | --- | 4 | --- | --- |
| Unweighted average length (all years) | | | | | | |
| 3 | | 587.3 | | | 580.5 | |
| 4 | | 631.1 | | | 619.9 | |
| 5 | | 648.8 | | | 655.7 | |

Table 8.--Age composition of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas

| Area, year, and age of fish (years) | Males | | Females | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Alaska Peninsula | | | | |
| 1951 | | | | |
| 3 | 14 | 18.9 | 7 | 10.0 |
| 4 | 44 | 59.5 | 43 | 61.4 |
| 5 | 16 | 21.6 | 20 | 28.6 |
| Total | 74 | | 70 | |
| 1952 | | | | |
| 3 | 58 | 50.0 | 20 | 17.2 |
| 4 | 50 | 43.1 | 85 | 73.3 |
| 5 | 8 | 6.9 | 11 | 9.5 |
| Total | 116 | | 116 | |
| 1953 | | | | |
| 3 | 55 | 20.1 | 50 | 17.8 |
| 4 | 184 | 67.4 | 193 | 68.7 |
| 5 | 34 | 12.5 | 38 | 13.5 |
| Total | 273 | | 281 | |
| 1954 | | | | |
| 3 | 183 | 14.7 | 45 | 3.9 |
| 4 | 840 | 67.3 | 845 | 73.2 |
| 5 | 225 | 18.0 | 265 | 22.9 |
| Total | 1,248 | | 1,155 | |
| 1955 | | | | |
| 3 | 30 | 10.6 | 10 | 3.6 |
| 4 | 224 | 79.4 | 238 | 85.3 |
| 5 | 28 | 9.9 | 31 | 11.1 |
| Total | 282 | | 279 | |
| 1956 | | | | |
| 3 | 41 | 5.2 | 19 | 2.5 |
| 4 | 716 | 90.4 | 737 | 93.6 |
| 5 | 35 | 4.4 | 31 | 3.9 |
| Total | 792 | | 787 | |
| 1957 | | | | |
| 3 | 28 | 8.3 | 14 | 4.3 |
| 4 | 205 | 60.5 | 213 | 64.9 |
| 5 | 106 | 31.2 | 101 | 30.8 |
| Total | 339 | | 328 | |
| All years | | | | |
| 3 | 409 | 13.1 | 165 | 5.5 |
| 4 | 2,263 | 72.4 | 2,354 | 78.0 |
| 5 | 452 | 14.5 | 497 | 16.5 |
| Total | 3,124 | | 3,016 | |

Table 8.--Age composition of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas--continued

| Area, year, and age of fish (years) | Males | | Females | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Kodiak Island | | | | |
| 1948 | | | | |
| 3 | 15 | 13.1 | 8 | 6.7 |
| 4 | 63 | 55.3 | 69 | 58.0 |
| 5 | 36 | 31.6 | 42 | 35.3 |
| Total | 114 | | 119 | |
| 1949 | | | | |
| 3 | 4 | 2.4 | 4 | 2.6 |
| 4 | 99 | 60.0 | 110 | 71.4 |
| 5 | 62 | 37.6 | 40 | 26.0 |
| Total | 165 | | 154 | |
| 1950 | | | | |
| 3 | 1 | 1.7 | 2 | 3.6 |
| 4 | 38 | 66.7 | 37 | 66.1 |
| 5 | 18 | 31.6 | 17 | 30.3 |
| Total | 57 | | 56 | |
| 1951 | | | | |
| 3 | 1 | 5.3 | 1 | 6.3 |
| 4 | 11 | 57.9 | 4 | 25.0 |
| 5 | 7 | 36.8 | 11 | 68.7 |
| Total | 19 | | 16 | |
| 1955 | | | | |
| 3 | 4 | 2.7 | 0 | 0 |
| 4 | 81 | 55.5 | 86 | 51.2 |
| 5 | 61 | 41.8 | 82 | 48.8 |
| Total | 146 | | 168 | |
| 1956 | | | | |
| 3 | 1 | 2.6 | 1 | 2.7 |
| 4 | 33 | 86.8 | 33 | 89.2 |
| 5 | 4 | 10.5 | 3 | 8.1 |
| Total | 38 | | 37 | |
| 1957 | | | | |
| 3 | 31 | 8.5 | 9 | 3.0 |
| 4 | 280 | 76.5 | 235 | 78.9 |
| 5 | 55 | 15.0 | 54 | 18.1 |
| Total | 366 | | 298 | |
| All years | | | | |
| 3 | 57 | 6.3 | 25 | 2.9 |
| 4 | 605 | 66.9 | 574 | 67.7 |
| 5 | 243 | 26.8 | 249 | 29.4 |
| Total | 905 | | 848 | |

Table 8.--Age composition of chum salmon from Alaska Peninsula, Kodiak Island, and Prince William Sound areas--continued

| Area, year, and age of fish (years) | Males | | Females | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Prince William Sound | | | | |
| 1952 | | | | |
| 3 | 27 | 27.8 | 17 | 18.9 |
| 4 | 47 | 48.5 | 41 | 45.6 |
| 5 | 23 | 23.7 | 32 | 35.5 |
| Total | 97 | | 90 | |
| 1953 | | | | |
| 3 | 50 | 11.7 | 19 | 4.9 |
| 4 | 302 | 70.9 | 324 | 82.4 |
| 5 | 74 | 17.4 | 50 | 12.7 |
| Total | 426 | | 393 | |
| 1954 | | | | |
| 3 | 30 | 52.6 | 15 | 34.9 |
| 4 | 20 | 35.1 | 25 | 58.1 |
| 5 | 7 | 12.3 | 3 | 7.0 |
| Total | 57 | | 43 | |
| 1955 | | | | |
| 3 | 4 | 14.3 | 2 | 7.4 |
| 4 | 22 | 78.6 | 23 | 85.2 |
| 5 | 2 | 7.1 | 2 | 7.4 |
| Total | 28 | | 27 | |
| 1956 | | | | |
| 3 | 54 | 17.4 | 14 | 4.6 |
| 4 | 245 | 79.1 | 287 | 93.5 |
| 5 | 11 | 3.5 | 6 | 1.9 |
| Total | 310 | | 307 | |
| 1957 | | | | |
| 3 | 12 | 10.8 | 3 | 2.8 |
| 4 | 77 | 69.4 | 80 | 74.8 |
| 5 | 22 | 19.8 | 24 | 22.4 |
| Total | 111 | | 107 | |
| 1958 | | | | |
| 3 | 14 | 18.4 | 8 | 12.3 |
| 4 | 55 | 72.4 | 53 | 81.5 |
| 5 | 7 | 9.2 | 4 | 6.2 |
| Total | 76 | | 65 | |
| All years | | | | |
| 3 | 191 | 17.2 | 78 | 7.6 |
| 4 | 768 | 69.5 | 833 | 80.7 |
| 5 | 146 | 13.2 | 121 | 11.7 |
| Total | 1,105 | | 1,032 | |
| All areas and years | | | | |
| 3 | 657 | 12.8 | 268 | 5.5 |
| 4 | 3,636 | 70.8 | 3,761 | 76.8 |
| 5 | 841 | 16.4 | 867 | 17.7 |
| Total | 5,134 | | 4,896 | |

## SUMMARY

Data on length, age, and sex ratio of chum salmon were collected between 1948 and 1958 in the Alaska Peninsula, Kodiak Island, and Prince William Sound areas of Alaska. The data are not complete or continuous, as no formal program for sampling was organized. Material was collected according to the time available to biologists working in the areas and the availability of the fish. The data are the only biological information (except for catch statistics) for past runs of this species in the three areas, and as such represent an important source of historical and reference material. They are therefore included as an appendix to this report.

Analyses were performed by grouping the data by years, by area, and by time periods within years. The data permit only general statements concerning the chum salmon runs to three areas, but do provide a measure of the intraseasonal and interarea variability in length, age, and sex ratio.

The analyses are summarized as follows:

1. Length distributions of chum salmon in the three principal age classes overlapped considerably. Three- and five-year-old length distributions overlapped by 50 percent, and age class 4 overlapped almost the entire range of the adjoining two age classes. Consequently, length is not a useful guide to age in these areas, and vice versa.

2. Little difference was found in the mean size of chum salmon of the same age class either among the three areas or during the spawning season. Prince William Sound fish were largest. Mean lengths increased from west to east.

3. Age class structure of the chum salmon runs of the central and western regions of Alaska averaged about 10 percent 3-year-olds, 75 percent 4-year-olds, and 15 percent 5-year-olds.

4. Age composition is similar in the Alaska Peninsula and Prince William Sound areas, but somewhat different in the Kodiak Island area. Kodiak Island has significantly more 5-year-old fish and fewer 3-year-old fish than the other two areas.

5. Age composition of the runs changes within seasons in all three areas. As the season progresses, 3-year-olds increase and 5-year-olds decrease. The percentage of fish in age class 4 remains fairly constant throughout the season.

6. Sex ratios do not deviate markedly from 50:50, either by area or in time. The trend is toward fewer males as the season progresses.

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Salmon packers who assisted in the three areas were:

Alaska Peninsula area:
P. E. Harris Co., Inc.
Pacific American Fisheries, Inc.
Alaska Pacific Salmon Co.
Alaska Packers Association
Chignik Fisheries Co.

Kodiak Island area:
Alaska Packers Association
San Juan Fishing and Packing Co.
Kodiak Fisheries Co.
Pacific American Fisheries, Inc.
Parks Canning Co.
Libby, McNeill and Libby
Washington Fish and Oyster Co.
West Point Canning Co.
Halferty Canneries, Inc.
King Crab, Inc.

Prince William Sound area:
Halferty Canneries, Inc.
New England Fish Co.
San Juan Fishing and Packing Co.
Copper River Co-op, Inc.

## LITERATURE CITED

GILBERT, CHARLES H., AND WILLIS H. RICH.
1927. Second experiment in tagging salmon in the Alaska Peninsula Fisheries Reservation, summer of 1923. Bulletin of the U.S. Bureau of Fisheries, vol. 42 for 1926, p. 27-75. [Document No. 991, issued December 3, 1925.]

HENRY, KENNETH A.
1953. Analysis of factors affecting the production of chum salmon *Oncorhynchus keta* in Tillamook Bay. Fish Commission of Oregon, Contribution No. 18, 37 p.

KOO, TED S. Y.
(In press) Age and growth studies of red salmon scales by graphical means. Publication in Fisheries - New Series, vol. I. College of Fisheries, University of Washington.

THORSTEINSON, FREDRIK V.
1959. Pink salmon migrations along the Alaska Peninsula. *In* Alaska Fisheries Briefs, p. 1-7. U.S. Fish and Wildlife Service, Circular 59.

# APPENDIX

A. Biological Statistics for Chum Salmon, Alaska Peninsula area, 1951-57

Table A-1. --Particulars of measurements and scale samples of chum salmon taken in Alaska Peninsula commercial catch, 1951-57
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1951 | | | | | | | | |
| June 20 | 1 - Cape Lutke | PS | 87 | 96 | 183 | 8 | 8 | 16 |
| July 10 and 14 | 2 - East Anchor Cove-Ikatan Bay | T | 215 | 242 | 457 | 30 | 30 | 60 |
| July 17 and 20 | 3 - East Anchor Cove-Ikatan Bay | T | 157 | 201 | 358 | 17 | 16 | 33 |
| July 27-30 | 4 - Shumagin Islands | T | 308 | 245 | 553 | 19 | 16 | 35 |
| Total | | | 767 | 784 | 1,551 | 74 | 70 | 144 |
| 1952 | | | | | | | | |
| July 19 | 5 - Shumagin Islands | T | 44 | 40 | 84 | 18 | 20 | 38 |
| July 21 | 6 - Shumagin Islands | T | 115 | 114 | 229 | 38 | 38 | 76 |
| July 22 | 7 - Shumagin Islands | T | 67 | 53 | 120 | 23 | 19 | 42 |
| July 24 | 8 - Shumagin Islands | T | 52 | 47 | 99 | 20 | 19 | 39 |
| July 25 | 9 - Shumagin Islands | T | 67 | 48 | 115 | 17 | 20 | 37 |
| Total | | | 345 | 302 | 647 | 116 | 116 | 232 |
| 1953 | | | | | | | | |
| June 8-14 | 10 - Cape Lutke | PS | 98 | 101 | 199 | 19 | 20 | 39 |
| June 15 and 17 | 11 - Cape Lutke | PS | 38 | 35 | 73 | 20 | 24 | 44 |
| June 20 | 12 - Cape Lutke | PS | 66 | 60 | 126 | 19 | 17 | 36 |
| June 20 | 13 - East Anchor Cove-Ikatan Bay | T | 81 | 73 | 154 | 16 | 19 | 35 |
| June 22 | 14 - East Anchor Cove-Ikatan Bay | T | 67 | 61 | 128 | 15 | 18 | 33 |
| June 29-30 | 15 - Chignik Bay | BS and T | 319 | 172 | 491 | 32 | 34 | 66 |
| June 30 | 16 - East Anchor Cove-Ikatan Bay | T | 121 | 114 | 235 | 20 | 16 | 36 |
| July 2 | 17 - East Anchor Cove-Ikatan Bay | T | 108 | 102 | 210 | 18 | 18 | 36 |
| July 7 and 10 | 18 - Shumagin Islands | T | 246 | 215 | 461 | 38 | 37 | 75 |
| July 17 | 19 - Shumagin Islands | T | 117 | 121 | 238 | 19 | 20 | 39 |

Table A-1. --Particulars of measurements and scale samples of chum salmon taken in Alaska Peninsula commercial catch, 1951-57 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1953 continued | | | | | | | | |
| July 21 | 20 - Shumagin Islands | T | 116 | 87 | 203 | 18 | 20 | 38 |
| July 24 | 21 - Shumagin Islands | T | 122 | 100 | 222 | 20 | 19 | 39 |
| July 27 | 22 - Shumagin Islands | T | 115 | 121 | 236 | 19 | 19 | 38 |
| Total | | | 1,614 | 1,362 | 2,976 | 273 | 281 | 554 |
| 1954 | | | | | | | | |
| June 10-20 | 23 - Cape Lutke | PS | 226 | 240 | 466 | 205 | 212 | 417 |
| June 18 | 24 - Kujulik Bay | BS | 41 | 41 | 82 | 36 | 37 | 73 |
| June 18-22 | 25 - East Anchor Cove-Ikatan Bay | T | 161 | 141 | 302 | 154 | 133 | 287 |
| June 22 | 26 - Kujulik Bay | BS | 79 | 69 | 148 | 78 | 67 | 145 |
| June 23-24 | 27 - Chignik Lagoon | BS | 50 | 40 | 90 | 48 | 41 | 89 |
| June 25-27 | 28 - Chignik Lagoon | BS | 60 | 60 | 120 | 60 | 56 | 116 |
| June 27 | 29 - Chignik Bay | T | 60 | 58 | 118 | 52 | 46 | 98 |
| June 30 | 30 - Kujulik Bay | BS | 40 | 40 | 80 | 36 | 38 | 74 |
| July 5-9 | 31 - East Anchor Cove-Ikatan Bay | T | 180 | 115 | 295 | 171 | 113 | 284 |
| July 7 | 32 - Aniakchak Bay | BS | 46 | 44 | 90 | 34 | 41 | 75 |
| July 9-10 | 33 - Herendeen Bay | BS | 97 | 98 | 195 | 145 | 145 | 290 |
| July 14 | 34 - Herendeen Bay | BS | 20 | 20 | 40 | 19 | 16 | 35 |
| July 15 | 35 - Bear River | GN | 19 | 21 | 40 | 19 | 20 | 39 |
| July 16 | 36 - Moller Bay | GN | 14 | 13 | 27 | 14 | 12 | 26 |
| July 16 | 37 - Bear River | GN | 80 | 74 | 154 | 74 | 70 | 144 |
| July 16 | 38 - Nelson Lagoon | GN | 8 | 12 | 20 | 8 | 12 | 20 |
| July 19 | 39 - Bear River | GN | 20 | 20 | 40 | 18 | 20 | 38 |
| July 24 | 40 - Herendeen Bay | BS | 47 | 40 | 87 | 38 | 38 | 76 |
| July 25 | 41 - Nelson Lagoon | GN | 20 | 20 | 40 | 20 | 20 | 40 |
| July 28 | 42 - Nelson Lagoon | GN | 19 | 21 | 40 | 19 | 18 | 37 |
| Total | | | 1,287 | 1,187 | 2,474 | 1,248 | 1,155 | 2,403 |

Table A-1. --Particulars of measurements and scale samples of chum salmon taken in Alaska Peninsula commercial catch, 1951-57 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1955 | | | | | | | | |
| June 14-18 | 43 - Cape Lutke | PS | 50 | 36 | 86 | 23 | 18 | 41 |
| June 17-21 | 44 - East Anchor Cove-Ikatan Bay | T | 39 | 44 | 83 | 26 | 21 | 47 |
| June 26 | 45 - East Anchor Cove-Ikatan Bay | T | 16 | 10 | 26 | 10 | 8 | 18 |
| June 29 | 46 - East Anchor Cove-Ikatan Bay | T | 13 | 15 | 28 | 15 | 13 | 28 |
| July 1 | 47 - Izembek Bay | BS | 37 | 35 | 72 | 20 | 18 | 38 |
| July 5 | 48 - Izembek Bay | BS | 54 | 26 | 80 | 18 | 19 | 37 |
| July 7 | 49 - Izembek Bay | BS | 21 | 29 | 50 | 19 | 20 | 39 |
| July 9 | 50 - Izembek Bay | BS | 13 | 22 | 35 | 13 | 20 | 33 |
| July 12 | 51 - Izembek Bay | BS | 51 | 50 | 101 | 20 | 18 | 38 |
| July 13 | 52 - Izembek Bay | BS | 44 | 46 | 90 | 19 | 19 | 38 |
| July 13 | 53 - East Anchor Cove-Ikatan Bay | T | 0 | 0 | 0 | 8 | 8 | 16 |
| July 16-20 | 54 - Izembek Bay | BS | 144 | 143 | 287 | 49 | 49 | 98 |
| July 17 | 55 - Pavlof Bay | T | 28 | 22 | 50 | 16 | 19 | 35 |
| July 20-23 | 56 - Pavlof Bay | T | 30 | 39 | 69 | 26 | 29 | 55 |
| Total | | | 540 | 517 | 1,057 | 282 | 279 | 561 |
| 1956 | | | | | | | | |
| June 18-22 | 57 - Cape Lutke | PS | 26 | 14 | 40 | 25 | 12 | 37 |
| June 23 | 58 - East Anchor Cove-Ikatan Bay | T | 76 | 70 | 146 | 39 | 35 | 74 |
| June 25 | 59 - Cape Lutke | PS | 55 | 63 | 118 | 38 | 39 | 77 |
| June 28-29 | 60 - Izembek Bay | BS | 102 | 59 | 161 | 56 | 54 | 110 |
| June 30 | 61 - East Anchor Cove-Ikatan Bay | PS | 98 | 80 | 178 | 36 | 40 | 76 |
| July 3-5 | 62 - East Anchor Cove-Ikatan Bay | T | 124 | 144 | 268 | 61 | 64 | 125 |
| July 9-13 | 63 - Izembek Bay | BS | 438 | 305 | 743 | 157 | 156 | 313 |
| July 16 | 64 - Izembek Bay | BS | 97 | 96 | 193 | 37 | 40 | 77 |
| July 17 | 65 - Izembek Bay | BS | 17 | 18 | 35 | 15 | 17 | 32 |

Table A-1. --Particulars of measurements and scale samples of chum salmon taken in Alaska Peninsula commercial catch, 1951-57 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1956 continued | | | | | | | | |
| July 18 | 66 - Izembek Bay | BS | 79 | 64 | 143 | 40 | 40 | 80 |
| July 19 | 67 - Izembek Bay | BS | 47 | 45 | 92 | 39 | 39 | 78 |
| July 19 | 68 - Pavlof Bay | T | 20 | 19 | 39 | 18 | 18 | 36 |
| July 20 | 69 - Izembek Bay | BS | 56 | 44 | 100 | 39 | 38 | 77 |
| July 23 | 70 - Izembek Bay | BS | 70 | 68 | 138 | 37 | 40 | 77 |
| July 24 | 71 - Izembek Bay | BS | 61 | 70 | 131 | 40 | 38 | 78 |
| July 27 | 72 - Pavlof Bay | T | 56 | 46 | 102 | 40 | 38 | 78 |
| July 30 | 73 - Pavlof Bay | T | 82 | 86 | 168 | 39 | 39 | 78 |
| July 30 | 74 - Izembek Bay | BS | 37 | 48 | 85 | 36 | 40 | 76 |
| Total | | | 1,541 | 1,339 | 2,880 | 792 | 787 | 1,579 |
| 1957 | | | | | | | | |
| June 20-21 | 75 - Cape Lutke | PS | 43 | 60 | 103 | 34 | 51 | 85 |
| June 21-22 | 76 - East Anchor-Ikatan Bay | GN and T | 119 | 76 | 195 | 53 | 36 | 89 |
| June 30 | 77 - Ivanof Bay | PS | 129 | 47 | 176 | 37 | 35 | 72 |
| July 3 -9 | 78 - Izembek Bay | BS | 111 | 85 | 196 | 58 | 57 | 115 |
| July 8 and 12 | 79 - St. Catherine Cove | BS | 197 | 211 | 408 | 79 | 74 | 153 |
| July 16-17 | 80 - Izembek Bay | BS | 100 | 84 | 184 | 39 | 39 | 78 |
| July 25 | 81 - East Anchor Cove-Ikatan Bay | T | 101 | 80 | 181 | 39 | 36 | 75 |
| Total | | | 800 | 643 | 1,443 | 339 | 328 | 667 |

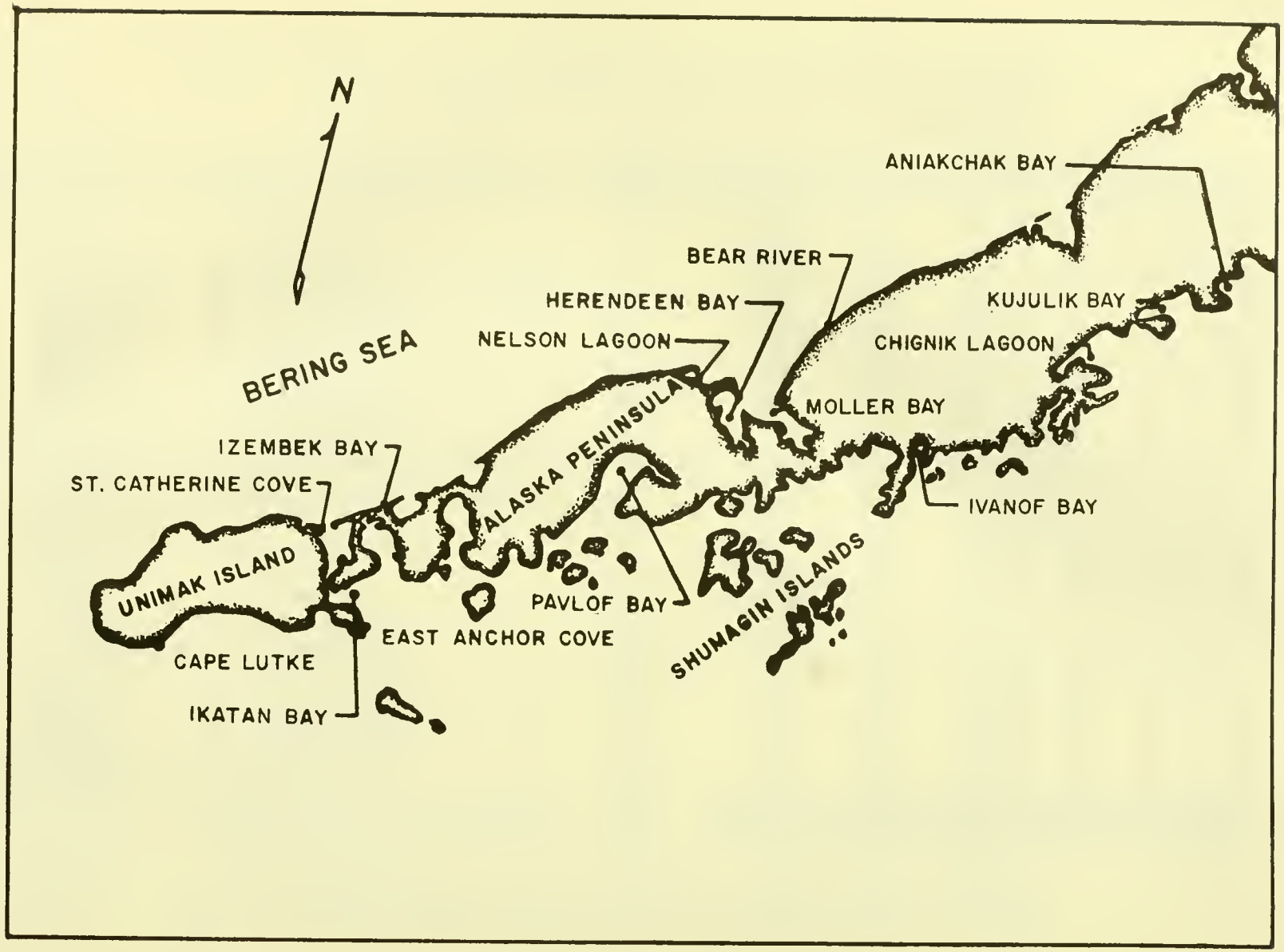



Figure A-1.--Localities where chum salmon samples were taken in the Alaska Peninsula commercial catch, 1951-57.

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57

| Length by centimeter groups (mm.) | Sample No. 1 Cape Lutke June 20, 1951 | | | | | | Sample No. 2 East Anchor Cove-Ikatan Bay July 10 and 14, 1951 | | | | | | Sample No. 3 East Anchor Cove-Ikatan Bay July 17 and 20, 1951 | | | | | | Sample No. 4 Shumagin Islands July 27-30, 1951 | | | | | | Sample No. 5 Shumagin Islands July 19, 1952 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 1 | | | | | | | | | | | | 1 | | | | 2 | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | 1 | 1 | | 1 | | | | | | | | | | 1 | | | | |
| 525 | | | | | 1 | 1 | | 2 | | 1 | | | | | | 1 | | | | | | | | | | | | | | |
| 535 | | | | | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | 1 | 1 | | | | |
| 545 | | | | | | | 1 | | | 1 | 1 | 1 | | 1 | | | 3 | | | | | | | | | 2 | | | | |
| 555 | | | | | 2 | | | 3 | | | | | 1 | 1 | | | | | 2 | | | | 1 | | | | | | | |
| 565 | | 1 | | | | | 1 | 4 | 1 | | 3 | 1 | 1 | 1 | | | | | | 1 | | | | 1 | 1 | | | 2 | | |
| 575 | | | | | | 1 | | | | | 4 | 2 | | 1 | | | 2 | | | | | 1 | 1 | | | | | | | |
| 585 | | | | | 1 | | 1 | 1 | 1 | 1 | 4 | 1 | | 1 | | | 3 | | | 3 | | | 2 | 1 | 1 | | | 3 | | |
| 595 | | | | | 1 | 1 | 2 | 2 | | 1 | | 1 | | | | | | | | | 1 | | 1 | 1 | 2 | | | 2 | | |
| 605 | | 2 | | | | | | 4 | | | 2 | 1 | | | 1 | | 2 | | | 3 | | | | | 1 | 1 | | 2 | | |
| 615 | | | 1 | | | | | | | | | | | 1 | | | | | | 1 | | | 2 | 1 | 1 | | | 4 | | |
| 625 | | 1 | | | | | | 1 | 1 | | | 2 | | 1 | | | | 2 | | 1 | | | 2 | 2 | | 2 | 1 | 2 | | |
| 635 | | | 1 | | | | | 1 | | | | | | | | | | | | 1 | 2 | | | | | | | 2 | | |
| 645 | | | 1 | | | | | | 2 | | | | | 1 | 1 | | | | | | | | | | 1 | | | | | |
| 655 | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | |
| 665 | | | | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | 1 | | | |
| 675 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 2 | | |
| 685 | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 4 | 3 | 0 | 5 | 3 | 6 | 19 | 5 | 4 | 17 | 9 | 5 | 10 | 2 | 2 | 12 | 2 | 2 | 11 | 6 | 1 | 9 | 6 | 8 | 8 | 2 | 1 | 19 | 0 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter groups (mm.) | Sample No. 6 Shumagin Islands July 21, 1952 | | | | | | Sample No. 7 Shumagin Islands July 22, 1952 | | | | | | Sample No. 8 Shumagin Islands July 24, 1952 | | | | | | Sample No. 9 Shumagin Islands July 25, 1952 | | | | | | Sample No. 10 Cape Lutke June 8-14, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | 1 | | | | | | | | | | | | 2 | | | | | | | | | | | |
| 515 | 2 | | | | | | | | | | | | 3 | | | 1 | | | 2 | | | 1 | | | | | | | 1 | |
| 525 | | | | | | | | 1 | | | | | 2 | | | | | | | | | 1 | | | | | | | | |
| 535 | 1 | | | 2 | | | 1 | | | | | | 1 | | | 1 | | | | | | | | | 1 | | | | 2 | |
| 545 | 4 | | | 2 | | | 1 | | | | 2 | | | | | | | | 1 | | | | 1 | | | 2 | | | | |
| 555 | 2 | 1 | | 2 | 4 | | 1 | | | | 1 | | | | | 2 | | | 2 | | | | 1 | | 1 | 3 | | | 4 | |
| 565 | 2 | | | 2 | 1 | 1 | 1 | 2 | | | | | | | | | 1 | | | | | | | | | 1 | | | 3 | 1 |
| 575 | 2 | | | | 3 | | | | | | 1 | | 1 | 1 | | 1 | 3 | | 1 | 2 | | | | | | 1 | | | 3 | |
| 585 | 1 | | | 2 | 5 | | 1 | | 1 | | 2 | | | | | | 3 | | 1 | | | | 3 | | | 2 | | | 2 | 1 |
| 595 | | 1 | | | 2 | | 1 | 1 | | | 3 | | 3 | 1 | | | 1 | | 1 | | | 1 | 1 | | | 4 | | | | 1 |
| 605 | 1 | 4 | | 1 | 4 | | | | | | | | 1 | 1 | | | 2 | 1 | | | | | 3 | | | 2 | | | | |
| 615 | | 1 | | | 1 | 1 | 1 | 1 | | | 1 | 2 | | 2 | | | 1 | 1 | 1 | | | | 2 | | | 1 | | | | |
| 625 | | 3 | | | 1 | | 1 | 2 | | | 1 | | | 1 | | | | | | 1 | | | 2 | | | | | | 1 | |
| 635 | 1 | 4 | | | 1 | | 1 | 1 | | | 2 | | | 1 | | | 1 | | | | | | 2 | 1 | | | | | | |
| 645 | | 4 | 2 | | 1 | 1 | | | | | | 2 | | | | | | | | 1 | | | 1 | | | 1 | | | | |
| 655 | | | 2 | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | |
| 665 | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | 1 |
| 675 | | | | | | 1 | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | |
| 685 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 16 | 18 | 4 | 11 | 23 | 4 | 12 | 10 | 1 | 0 | 15 | 4 | 11 | 8 | 1 | 5 | 12 | 2 | 11 | 6 | 0 | 3 | 16 | 1 | 2 | 17 | 0 | 0 | 16 | 4 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter groups (mm.) | Sample No. 11 Cape Lutke June 15 and 17, 1953 | | | | | | Sample No. 12 Cape Lutke June 20, 1953 | | | | | | Sample No. 13 East Anchor Cove-Ikatan Bay June 20, 1953 | | | | | | Sample No. 14 East Anchor Cove-Ikatan Bay June 22, 1953 | | | | | | Sample No. 15 Chignik Bay June 29-30, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 525 | | | | 1 | | | | | | | 2 | 1 | | | | | | | | | | | 2 | | | | | | | |
| 535 | | | | | 1 | | 2 | | | 1 | 1 | | 2 | | | | 4 | | 1 | | | | | | | | | | | |
| 545 | | | | | 2 | | | 1 | | | 1 | | | | | | 1 | | | | | | | | 1 | | | | | |
| 555 | | | | | 2 | | 1 | 1 | | | 2 | | | | | | 4 | | | | | | 4 | | 1 | | | 4 | | |
| 565 | | 1 | | | 2 | | 1 | | | | 6 | | | 1 | | | | | | 2 | 1 | | 1 | | 2 | | | 4 | | |
| 575 | | 4 | 1 | | 4 | 1 | | 2 | 1 | | 1 | 2 | | | | | 2 | 1 | | | | | 1 | | | | | 2 | | |
| 585 | | 2 | | | 3 | | | 2 | 1 | | | | | 2 | | | 3 | | | | | | 1 | | 7 | | | 6 | | |
| 595 | | 3 | | | 2 | | | 1 | | | | | | 3 | | | 1 | 1 | | 1 | | | | 1 | 4 | | | 4 | | |
| 605 | | 1 | 2 | | | 2 | | 1 | | | | | | 1 | 1 | | 1 | 1 | | 3 | | | 1 | | 4 | | | 5 | | |
| 615 | | 1 | | | 2 | | | 1 | | | | | | 2 | 1 | | | | | 2 | | | | | 6 | | | 3 | | |
| 625 | | | 1 | | | | | | 1 | | | | | 1 | | | | | | | | | | 1 | 2 | | | 2 | | |
| 635 | | | | | | 1 | | 1 | | | | | | 1 | | | | | | | | | 2 | 1 | 2 | | | 2 | | |
| 645 | | 2 | 1 | | | | | | 1 | | | | | | 1 | | | | | | | | | 2 | 1 | | | 1 | | |
| 655 | | | 1 | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | |
| 665 | | | | | | | | 1 | | | | | | | | | | | | 1 | 1 | | | | 2 | | | 1 | | |
| 675 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 14 | 6 | 1 | 19 | 4 | 4 | 11 | 4 | 1 | 13 | 3 | 2 | 11 | 3 | 0 | 16 | 3 | 2 | 10 | 3 | 1 | 12 | 5 | 32 | 0 | 0 | 34 | 0 | 0 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter groups (mm.) | Sample No. 16 East Anchor Cove-Ikatan Bay June 30, 1953 | | | | | | Sample No. 17 East Anchor Cove-Ikatan Bay July 2, 1953 | | | | | | Sample No. 18 Shumagin Islands July 7 and 10, 1953 | | | | | | Sample No. 19 Shumagin Islands July 17, 1953 | | | | | | Sample No. 20 Shumagin Islands July 21, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 525 | | | | 1 | | | | | | | 2 | | | | | | 1 | | | | | | 1 | | | | | | | |
| 535 | | | | | | 1 | | 1 | | | 1 | | | | 1 | | | | 1 | | | | | | | | | | | |
| 545 | 1 | | | | 4 | | | | | | 1 | | 2 | 1 | | | 1 | | | | | | 1 | | 1 | | | | | |
| 555 | | | | | | | | 2 | | | | 1 | | 1 | | | 3 | | | | | | | | | 1 | | | 2 | |
| 565 | 1 | 1 | | | 1 | | | 2 | | 1 | 2 | | | 3 | | | 3 | | 2 | | | 1 | | | | | | | | |
| 575 | | 2 | | | 4 | 2 | | | | | 1 | | | 3 | 1 | | 5 | | | 2 | | | 1 | | | 3 | | | 2 | |
| 585 | | 2 | | | 1 | | 1 | 5 | | | 2 | | | 2 | | | 6 | 1 | | 1 | | | 1 | 1 | | | | | 2 | |
| 595 | | 2 | | | 1 | | | 1 | | | | | | 1 | | | 4 | 1 | | 1 | | | 3 | | 1 | | | | 2 | |
| 605 | | | 1 | | | | | 1 | | | 1 | 1 | | 2 | 1 | | 4 | | | | | | 1 | | | 1 | | | 4 | |
| 615 | | 3 | | | | | | | | | | 1 | | 2 | 1 | | 2 | | | 3 | | | 3 | 1 | | 2 | | | 5 | |
| 625 | | | | | | | | 1 | | | | | | 6 | | | 1 | | | 1 | | | 1 | | | 3 | | | 1 | |
| 635 | | | 1 | | | | | 1 | | | | 1 | | 1 | 2 | | 1 | 1 | | 1 | | | 2 | | | 3 | | | | |
| 645 | | | 1 | | | | | 1 | | | | | | 3 | | | 1 | | | 3 | | | 1 | 1 | | 1 | | | 2 | |
| 655 | | 3 | 1 | | | | | 1 | | | | | | 1 | 1 | | | | | 2 | | | 1 | | | | | | | |
| 665 | | | | | | | | 1 | | | | 1 | | 2 | 1 | | | | | | 1 | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 695 | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | 1 | | | | |
| 705 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 2 | 13 | 5 | 2 | 11 | 3 | 1 | 17 | 0 | 2 | 11 | 5 | 2 | 29 | 7 | 2 | 32 | 3 | 3 | 14 | 2 | 1 | 16 | 3 | 2 | 16 | 0 | 0 | 20 | 0 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 21 Shumagin Islands July 24, 1953 | | | | | | Sample No. 22 Shumagin Islands July 27, 1953 | | | | | | Sample No. 23 Cape Lutke June 1-20, 1954 | | | | | | Sample No. 24 Kujulik Bay June 18, 1954 | | | | | | Sample No. 25 East Anchor Cove-Ikatan Bay June 18-22, 1954 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| 515 | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | |
| 525 | | | | | | | | 1 | | | | | | | | | 5 | | | | | | | | 4 | | | | 4 | |
| 535 | 1 | | | 1 | | | | | | | | | | 1 | | | 9 | | | | | | | | 1 | | | | 5 | |
| 545 | | | | 1 | | | | | | | | | | 4 | | | 23 | 1 | | | | | | | 1 | | | | 10 | |
| 555 | | | | | | | 1 | | | | | | | 3 | | | 20 | | | 1 | 1 | | | | 2 | 4 | | | 18 | 2 |
| 565 | | | | 1 | 1 | | | 1 | | | 1 | | | 12 | | | 28 | | | | | | | | 1 | 7 | | | 17 | |
| 575 | | 1 | | 2 | 3 | | | 1 | | | 2 | | | 21 | 2 | | 24 | | | 1 | | | | | 2 | 8 | 2 | | 12 | |
| 585 | | 2 | 1 | | 3 | | | | | | 2 | | | 22 | 1 | | 33 | 6 | | 1 | 1 | | 2 | | 2 | 10 | 1 | | 14 | 4 |
| 595 | | 1 | | | 2 | | | | | | 2 | 1 | | 17 | 1 | | 15 | 2 | | | 1 | | | | 1 | 6 | 1 | | 10 | 2 |
| 605 | | 1 | | | | | 1 | 3 | | | | | | 21 | 1 | | 14 | 7 | | 4 | | | 3 | 1 | 1 | 12 | 3 | | 10 | 4 |
| 615 | | 2 | | | 1 | | | 3 | | | 3 | 1 | | 20 | 1 | | 4 | 2 | | | 2 | | | 1 | | 20 | 6 | | 2 | 2 |
| 625 | | | | | 1 | | | | | 1 | | 1 | | 27 | 4 | | 5 | 5 | | 3 | 1 | | 2 | 4 | | 21 | 4 | | 6 | 2 |
| 635 | | 2 | | | | | | 1 | | | 2 | | | 17 | 1 | | 2 | 3 | | 4 | 1 | | 4 | 3 | | 7 | 2 | | 2 | 2 |
| 645 | | 2 | 1 | | 1 | | | 1 | | | | | | 5 | 3 | | | | | 1 | 2 | | 2 | 4 | | 3 | 3 | | 1 | 2 |
| 655 | | 1 | 1 | | | | | 5 | | | 1 | 1 | | 11 | 2 | | 1 | 1 | | 1 | 3 | | 2 | 3 | | 5 | 6 | | | |
| 665 | | 3 | | | 1 | | | | | | | | | 1 | 1 | | | | | | 2 | | | 3 | | | 5 | | | 1 |
| 675 | | 1 | | | | 1 | | | | | 1 | | | 3 | 1 | | | | | 1 | | | | | | 1 | 1 | | | |
| 685 | | | | | | | | | | | | | | 1 | | | | | | | 2 | | 2 | | | | | | | |
| 695 | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | |
| 705 | | | | | | | | | | | | | | 1 | | | | | | | 1 | | 1 | | | | 1 | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 16 | 3 | 5 | 13 | 1 | 2 | 16 | 1 | 1 | 14 | 4 | 0 | 187 | 18 | 0 | 185 | 27 | 0 | 17 | 19 | 0 | 18 | 19 | 15 | 104 | 35 | 1 | 111 | 21 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 26 Kujulik Bay June 22, 1954 | | | | | | Sample No. 27 Chignik Lagoon June 23-24, 1954 | | | | | | Sample No. 28 Chignik Lagoon June 25-27, 1954 | | | | | | Sample No. 29 Chignik Bay June 27, 1954 | | | | | | Sample No. 30 Kujulik Bay June 30, 1954 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | 1 | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | 1 | | | | | | 1 | | | | | | | | | | 1 | | | 1 | | | | | | | | | | |
| 545 | | | | | | | | | | | | | 1 | 1 | | | | | | | | | 1 | | | 1 | | | | |
| 555 | | 1 | | | | | 1 | 1 | | | | | 1 | | | | | | 1 | 1 | 1 | | | | 1 | | | | 1 | |
| 565 | | 4 | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | 1 | | | | |
| 575 | | 7 | | | 3 | | | 4 | | | | 1 | | 1 | | | 2 | | 1 | 6 | | | | | 1 | | | | 1 | |
| 585 | | 6 | 1 | | 3 | 1 | | 5 | | | 1 | | | 4 | | | 3 | | 1 | 7 | | | 5 | 1 | | 2 | | | 2 | 1 |
| 595 | | 10 | 2 | | 5 | 1 | | 4 | | | 9 | | | 6 | 1 | | 5 | | | | | | 8 | | | | | | 2 | 1 |
| 605 | | 6 | 1 | | 4 | 1 | | 7 | | | 4 | | | 3 | 2 | | 6 | 1 | | 3 | | | 1 | | | 2 | 2 | | 3 | 3 |
| 615 | | 7 | 1 | | 3 | 4 | | 2 | | | 3 | 2 | 1 | 7 | 1 | | 8 | 3 | | 3 | | | 5 | | | 1 | 1 | | 4 | 2 |
| 625 | | 5 | 1 | | 4 | 7 | | 3 | 1 | | 7 | | | 6 | | | 5 | 5 | | 3 | 1 | | 8 | | | 5 | 1 | | 2 | |
| 635 | | 1 | 1 | | 2 | 7 | | 3 | 1 | | 8 | 2 | | 5 | 1 | | 5 | 1 | | 6 | 1 | | 6 | | | 1 | | | 1 | |
| 645 | | 3 | 7 | | 3 | 5 | | 2 | 1 | | 2 | 1 | | 7 | 1 | | 1 | 3 | | 1 | 1 | | 4 | 2 | | 3 | 1 | | 1 | 3 |
| 655 | | | 2 | | 1 | 6 | | 2 | 2 | | | | | 3 | | | 1 | 5 | | 1 | | | 2 | | | 2 | 2 | | 1 | 1 |
| 665 | | | 2 | | 1 | 2 | | 2 | | | | | | 1 | | | | | | 2 | 2 | | | | | 1 | 1 | | | 3 |
| 675 | | | 1 | | | 1 | | 1 | 3 | | | | | | 2 | | | 1 | | 2 | 1 | | 2 | 1 | | | 1 | | 2 | 3 |
| 685 | | | 2 | | | | | | | | | | | 1 | 1 | | | | | | 1 | | | | | | | | | 1 |
| 695 | | | 2 | | | 2 | | | 2 | | | | | | 1 | | | | | | | | | | | 1 | 1 | | | |
| 705 | | | 1 | | | | | | | | | 1 | | | 1 | | | | | | 2 | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 2 | | | |
| 725 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 3 | 51 | 24 | 1 | 29 | 37 | 2 | 36 | 10 | 0 | 34 | 7 | 3 | 46 | 11 | 0 | 37 | 19 | 3 | 38 | 11 | 0 | 42 | 4 | 2 | 21 | 13 | 0 | 20 | 18 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 31 East Anchor Cove-Ikatan Bay July 5-9, 1954 | | | | | | Sample No. 32 Aniakchak Bay July 7, 1954 | | | | | | Sample No. 33 Herendeen Bay July 9-10, 1954 | | | | | | Sample No. 34 Herendeen Bay July 14, 1954 | | | | | | Sample No. 35 Bear River July 15, 1954 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | 1 | 1 | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | 6 | | | 5 | | | | 1 | | | | | 1 | | | | 1 | | | | | | | | | | | | | |
| 535 | 4 | 2 | | 5 | 1 | | | | | | | | | 2 | | | | | | | | | | | 1 | 1 | | | | |
| 545 | 8 | 1 | | 7 | 2 | | | | | | | | 2 | 1 | | 1 | | | | | | | | | | | | | | |
| 555 | 11 | 2 | | 2 | 6 | | | | | | | | 2 | 4 | | | 3 | | 1 | | | | | | 1 | | | | | |
| 565 | 10 | 6 | | 2 | 5 | | | | | | 2 | | 3 | 6 | 2 | 2 | 2 | | | | | | | | | | | 1 | | |
| 575 | 7 | 3 | | 2 | 8 | | | 2 | | | 1 | | 2 | 3 | | | 2 | | 1 | | | | | | | | | | 2 | |
| 585 | 10 | 3 | | | 11 | 2 | | | 2 | | 4 | | | 6 | 2 | 1 | 6 | | | | 1 | | 1 | | | 2 | | | 1 | 1 |
| 595 | 5 | 6 | 1 | | 10 | 1 | | 2 | | | 4 | | 1 | 16 | 2 | | 16 | 3 | | 2 | | | 1 | | 1 | 3 | | | 2 | |
| 605 | 6 | 7 | 1 | | 5 | 2 | | 3 | 1 | | 4 | | 2 | 10 | 3 | | 14 | 7 | | 3 | 1 | | 2 | 2 | 1 | 1 | | | 3 | |
| 615 | 2 | 11 | | | 6 | 3 | | 2 | | | 6 | 1 | | 12 | 3 | | 18 | 12 | | 2 | | | 2 | 1 | | 1 | | | 4 | 1 |
| 625 | | 7 | 3 | | 10 | 2 | | 5 | 1 | | 3 | 1 | | 9 | 3 | | 15 | 4 | | | | | 1 | | | 1 | 1 | | 1 | 1 |
| 635 | | 15 | 2 | | 5 | 2 | | 3 | | | 2 | 2 | 1 | 8 | 4 | | 10 | 5 | | 2 | 1 | | 2 | | | 2 | 2 | | 1 | |
| 645 | 1 | 7 | 3 | | 2 | 3 | | 2 | | | 2 | 2 | | 9 | 4 | | 7 | 8 | | 2 | | | 1 | 2 | | 1 | | | | |
| 655 | | 6 | 1 | | | | | 2 | | | 1 | 1 | | 3 | 4 | | 2 | 5 | | | 1 | | | 1 | | | | | | 1 |
| 665 | | 3 | 1 | | | 1 | | 1 | | | | 1 | | 2 | 4 | | | 1 | | | 1 | | | | | | | | | |
| 675 | | | 1 | | | | | 1 | 2 | | | 2 | | 3 | 2 | | | | | 1 | | | | | | | | | 1 | |
| 685 | | 3 | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | |
| 695 | | | 2 | | | | | 1 | | | | | | 1 | 1 | | | | | | | | | | | | | | | |
| 705 | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | 1 | | | 2 | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 72 | 84 | 15 | 26 | 71 | 16 | 0 | 27 | 7 | 0 | 29 | 12 | 14 | 97 | 34 | 4 | 96 | 45 | 2 | 12 | 5 | 0 | 10 | 6 | 4 | 12 | 3 | 1 | 15 | 4 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 36 Moller Bay July 16, 1954 | | | | | | Sample No. 37 Bear River July 16, 1954 | | | | | | Sample No. 38 Nelson Lagoon July 16, 1954 | | | | | | Sample No. 39 Bear River July 19, 1954 | | | | | | Sample No. 40 Herendeen Bay July 24, 1954 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 525 | | | | | | | 4 | 1 | | | | | | | | | | | | | | | | | 1 | | | | | |
| 535 | | | | | | | 3 | 1 | | 1 | | | | | | | | | | | | | | | | 1 | | | | |
| 545 | | | | | | | 2 | | | 1 | | | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | |
| 555 | | 1 | | | | | 1 | 3 | 1 | | 1 | | 1 | | | | | | 2 | | | | | 1 | | 1 | | | 1 | |
| 565 | | 1 | | | | | 5 | 1 | | | 1 | | 1 | | | | | | | | | | 1 | | 2 | 2 | | 2 | 1 | |
| 575 | | | 1 | | | | 1 | 4 | 4 | | 4 | | | | | 1 | | | | | | | 3 | | 1 | | | | | |
| 585 | | 2 | | | 4 | | 5 | 6 | | | 10 | 2 | | | | | | | 2 | 1 | | | 1 | | | 4 | | 1 | 1 | |
| 595 | | 3 | | | 3 | | 1 | 5 | | | 8 | 3 | | | | | 1 | | 1 | 3 | | | 3 | 2 | 1 | | | | 4 | 2 |
| 605 | | 1 | | | 1 | | | 6 | | | 10 | 3 | 1 | | | | 2 | | | 2 | | | 4 | | 1 | 3 | | | 6 | |
| 615 | | | | | 1 | | | 4 | 1 | | 5 | 2 | | 2 | | | 4 | | 2 | | | | | 1 | | 1 | | | 3 | 1 |
| 625 | | 1 | | | 2 | | | 3 | | | 11 | 3 | | | | | 1 | | | | | | 2 | | | 3 | | | 4 | |
| 635 | | | | | | | 1 | 2 | | | | 2 | | 1 | | | 2 | | | 1 | | | 1 | | 1 | 2 | | | 2 | 1 |
| 645 | | 1 | | | | | | 2 | 1 | | 1 | | | | | | 1 | | | 1 | | | | | | 4 | 3 | | 3 | 2 |
| 655 | | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | 1 | 2 |
| 665 | | | | | 1 | | | 2 | 1 | | | 1 | | | 1 | | | | | | | | | | | 2 | 2 | | | |
| 675 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 1 | | | | |
| 685 | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | 1 | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 12 | 1 | 0 | 12 | 0 | 23 | 40 | 11 | 2 | 51 | 17 | 3 | 4 | 1 | 1 | 11 | 0 | 9 | 8 | 1 | 1 | 15 | 4 | 8 | 25 | 5 | 4 | 26 | 8 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 41 Nelson Lagoon July 25, 1954 | | | | | | Sample No. 42 Nelson Lagoon July 28, 1954 | | | | | | Sample No. 43 Cape Lutke June 14-18, 1955 | | | | | | Sample No. 44 East Anchor Cove-Ikatan Bay June 17-21, 1955 | | | | | | Sample No. 45 East Anchor Cove-Ikatan Bay June 26, 1955 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | 1 | | |
| 515 | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | 1 | |
| 525 | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | 1 | | 2 | | | | 1 | | | | | | | |
| 545 | 1 | | | | | | 1 | | | | | | | | | | 3 | | | | | | 3 | | | 2 | | | 1 | |
| 555 | 1 | | | | | | | | | | | | 1 | 2 | | | 4 | | | | | | | | | | | | 2 | |
| 565 | 1 | | | | | | 1 | | | | | | | 1 | | | 1 | | | 1 | | | 4 | | | | | | | |
| 575 | 1 | | | | | | 5 | | | | 1 | | | 1 | | | 3 | | 1 | | | | 3 | 1 | | 1 | | | 2 | |
| 585 | | 1 | | | 1 | | | | | 2 | | | | 4 | | | 1 | 1 | | 5 | 2 | | 2 | 1 | | 3 | | | | |
| 595 | 1 | | | | | | 1 | | | | 1 | | | 1 | 2 | | | | | 1 | | | | 2 | | 1 | | | | |
| 605 | 2 | 2 | | | 3 | | | | | | 2 | 1 | | 1 | 2 | | 1 | 1 | | 3 | | | | 1 | | 2 | | | | |
| 615 | 1 | 2 | | | 6 | | | | | 1 | 2 | | | | | | 1 | 1 | | 3 | | | | | | 1 | | | 1 | |
| 625 | 1 | 1 | | | 1 | | 1 | 3 | | 1 | 3 | | | 3 | | | | | | 2 | | | | | | | | | | |
| 635 | | 1 | 1 | | 4 | | | | | | 2 | | | | | | | | | | 1 | | | | | | | | | |
| 645 | | 1 | | | 2 | | | 4 | | | 1 | | | 2 | | | | | | 2 | 1 | | | | | | | | | |
| 655 | | | | | 2 | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | |
| 665 | | 1 | | | 1 | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 9 | 10 | 1 | 0 | 20 | 0 | 10 | 9 | 0 | 4 | 13 | 1 | 3 | 16 | 4 | 0 | 15 | 3 | 4 | 18 | 4 | 0 | 15 | 6 | 0 | 10 | 0 | 1 | 7 | 0 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 46 East Anchor Cove-Ikatan Bay June 29, 1955 | | | | | | Sample No. 47 Izembek Bay July 1, 1955 | | | | | | Sample No. 48 Izembek Bay July 5, 1955 | | | | | | Sample No. 49 Izembek Bay July 7, 1955 | | | | | | Sample No. 50 Izembek Bay July 9, 1955 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | | 1 | | | | | 1 | 1 | | | 1 | | | | | | 1 | | | | | 1 | 1 | | | | | | | |
| 555 | 1 | 1 | | | 1 | | | | | | 1 | | | | | | 1 | | | | | | 3 | | | | | | | |
| 565 | | 1 | | | 1 | | | | | | 3 | | | 1 | | | | | | | | | 2 | | | 2 | | | 1 | |
| 575 | | 1 | | | 1 | | | | | | | 1 | | 2 | | | 2 | | | 1 | 1 | | | | 1 | 1 | | | 3 | |
| 585 | | 1 | | | 4 | 1 | | 1 | | | 2 | | | 3 | | | 3 | | 1 | 4 | | | 2 | | | | | | 3 | |
| 595 | | | 1 | | 1 | | | 1 | | | 2 | | | | | | 3 | | | 2 | | | 4 | 1 | | | | | 3 | |
| 605 | | 2 | 1 | | | | | 2 | | | 2 | | | 1 | 1 | | 1 | 1 | | 2 | | | 5 | | | 4 | | | 4 | 1 |
| 615 | | 1 | | | 2 | | | 5 | 1 | | | 3 | | 4 | | | 1 | 1 | | 4 | | | | | | | | | 1 | 1 |
| 625 | | 1 | | | | | | 1 | | | 1 | | | 1 | | | 3 | | | 1 | | | | 1 | | 3 | | | 1 | |
| 635 | | 1 | | | | | | | | | | | | 2 | 1 | | 2 | | | | | | | | | | | | | 1 |
| 645 | | | | | | | | 1 | 1 | | | 1 | | 2 | | | | | | 2 | 1 | | | | | 2 | | | | |
| 655 | | | | | | | | 3 | | | | 1 | | | | | | | | | | | | | | | | | | |
| 665 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 11 | 3 | 0 | 12 | 1 | 2 | 15 | 3 | 0 | 12 | 6 | 0 | 16 | 2 | 0 | 17 | 2 | 1 | 16 | 2 | 1 | 17 | 2 | 1 | 12 | 0 | 1 | 16 | 3 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 51 Izembek Bay July 12, 1955 | | | | | | Sample No. 52 Izembek Bay July 13, 1955 | | | | | | Sample No. 53 East Anchor Cove-Ikatan Bay July 13, 1955 | | | | | | Sample No. 54 Izembek Bay July 16-20, 1955 | | | | | | Sample No. 55 Pavlof Bay July 17, 1955 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | 1 | | | | | | | | | 3 | | | | | |
| 515 | | | | | | | | | | | | | | | | | 1 | | 3 | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | 1 | | |
| 535 | | | | | 1 | | | | | | 1 | | 2 | | | | 1 | | | | | 1 | 1 | | | | | | 1 | |
| 545 | | | | 1 | | | | | | | 1 | | | | | | | | 2 | | | | 1 | | | | | | 4 | |
| 555 | | | | | 1 | | | | | | 1 | | | | | | | | | | | | 3 | | 1 | | | | 1 | |
| 565 | | | | | | | | 1 | | | 2 | | | | | | | | | 2 | | | 3 | | | 1 | | | 3 | |
| 575 | | 1 | | | 2 | | | 1 | | 1 | 2 | | | 1 | | | 1 | | 2 | 4 | | | 8 | | | 2 | | | 1 | |
| 585 | | | | | 1 | | | 3 | | | 2 | | | | | | | | | 6 | | | 5 | | | | | | 2 | |
| 595 | | 4 | | | 2 | 1 | | 5 | | | 1 | 2 | | 1 | | | 1 | | | 7 | | | 8 | | | 2 | | | 3 | |
| 605 | | 1 | | | 3 | | | 2 | | | 3 | | | | | | 2 | | | 2 | 1 | | 8 | | | | | | 2 | 1 |
| 615 | | 5 | 1 | | 3 | | | 1 | 1 | | 3 | | | 2 | | | | | | 3 | | | 3 | 2 | | 1 | | | | |
| 625 | | 3 | | | 2 | | | 2 | | | | | | | | | | | | 4 | 1 | | 2 | | | 3 | | | | |
| 635 | | | | | 1 | | | | | | | | | 1 | | | | | | 1 | | | 2 | 1 | | 2 | | | | |
| 645 | | 1 | | | | | | 2 | | | | | | | | | | | | 3 | 1 | | 1 | | | 1 | | | | |
| 655 | | 3 | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | |
| 665 | | | | | | | | | 1 | | | | | | | | | | | | 2 | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 695 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 19 | 1 | 1 | 16 | 1 | 0 | 17 | 2 | 1 | 16 | 2 | 2 | 6 | 0 | 1 | 7 | 0 | 7 | 35 | 7 | 1 | 45 | 3 | 4 | 12 | 0 | 1 | 17 | 1 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 56 Pavlof Bay July 20-23, 1955 | | | | | | Sample No. 57 Cape Lutke June 18-22, 1956 | | | | | | Sample No. 58 East Anchor Cove-Ikatan Bay June 23, 1956 | | | | | | Sample No. 59 Cape Lutke June 25, 1956 | | | | | | Sample No. 60 Izembek Bay June 28-29, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 2 | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 515 | 1 | | | | | | | | | | | | | | | | 2 | | 1 | 1 | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| 535 | | 2 | | | | | | 1 | | | 1 | | | | | | 2 | | | | | | | | | | | | 1 | |
| 545 | 1 | | | | 2 | | | 1 | | | 2 | | | | | | 6 | 1 | | 2 | | 1 | 8 | | | 1 | | | 1 | |
| 555 | 1 | 2 | | 1 | 1 | | | | | | 1 | | | 1 | | | 3 | | | 4 | | | 12 | 1 | | 1 | | | 5 | |
| 565 | | 1 | | | 1 | | 1 | 1 | | | 2 | | | 4 | | | 2 | 1 | | 4 | | | 1 | | | 4 | | | 9 | |
| 575 | | 1 | | | 4 | | | 6 | 1 | | 1 | | | 5 | | | 7 | | | 3 | | | 8 | 1 | | 5 | | | 10 | |
| 585 | | 2 | | | 6 | 1 | | 3 | | | 3 | | | 10 | | | 7 | | | 4 | | | 5 | | | 10 | | | 10 | 1 |
| 595 | | 1 | | | 4 | | | 2 | 1 | | 2 | | | 2 | | | | | | 6 | 1 | | 1 | | | 6 | 1 | | 6 | |
| 605 | | 2 | | | 2 | | | | | | | | | 7 | | | | 1 | | 3 | 1 | | | | | 8 | | | | 2 |
| 615 | | 2 | | | 3 | | | 3 | 2 | | | | | 3 | | | | | | 2 | | | | | | 9 | 1 | | 4 | |
| 625 | | 2 | | | 1 | | | 2 | | | | | | | 2 | | 1 | | | 1 | | | | | | 6 | | | 1 | 3 |
| 635 | | 2 | | | 1 | | | | 1 | | | | | 2 | | | | | | 1 | | | | | | 3 | | | | |
| 645 | | 1 | | | | | | | | | | | | 1 | 1 | | | 1 | | | 1 | | | | | | | | 1 | |
| 655 | | 1 | | | 1 | | | | | | | | | | 1 | | | | | 1 | | | | | | | | | | |
| 665 | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 5 | 21 | 0 | 2 | 26 | 1 | 1 | 19 | 5 | 0 | 12 | 0 | 0 | 35 | 4 | 0 | 31 | 4 | 1 | 33 | 4 | 1 | 36 | 2 | 1 | 53 | 2 | 0 | 48 | 6 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 61 East Anchor Cove-Ikatan Bay June 30, 1956 | | | | | | Sample No. 62 East Anchor Cove-Ikatan Bay July 3-5, 1956 | | | | | | Sample No. 63 Izembek Bay July 9-13, 1956 | | | | | | Sample No. 64 Izembek Bay July 16, 1956 | | | | | | Sample No. 65 Izembek Bay July 17, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | 1 | | | | 1 | | | 1 | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | 2 | | | | | | 1 | | 1 | | | | | | | 1 | | | | |
| 525 | | | | 1 | 4 | | | 1 | | | 1 | | | | | | | | | | | | | | | 1 | | | | |
| 535 | | | | 1 | 3 | | 1 | 2 | | | 7 | | | | | 1 | 5 | | | | | | 1 | | | | | | | |
| 545 | | 2 | | | 4 | | | 2 | | 1 | 6 | | 1 | 4 | | | 5 | | | 4 | | | 2 | | | | | | 1 | |
| 555 | | 1 | | | 2 | | | 6 | | | 3 | | | 3 | | | 14 | | 1 | 3 | | | 6 | | | | | | 2 | |
| 565 | 1 | 4 | | | 7 | | | 6 | | | 13 | | | 9 | | 2 | 17 | | | 1 | | | 3 | | | 3 | | | 3 | |
| 575 | 1 | 3 | | | 7 | | | 6 | | | 9 | | 1 | 17 | 1 | | 23 | | 1 | 5 | | | 10 | | | | | | 4 | |
| 585 | | 5 | | | 5 | | | 7 | | | 7 | | | 22 | | | 31 | | | 9 | | | 6 | | | 1 | | | 3 | |
| 595 | | 4 | | | 4 | | | 8 | | | 6 | 1 | 1 | 23 | 1 | | 24 | 1 | 1 | 1 | | | 5 | | | 5 | | | 2 | |
| 605 | | 3 | | | 1 | | | 4 | | | 1 | 1 | | 25 | 1 | | 21 | | | 5 | | | 4 | | | 1 | | | 2 | |
| 615 | | 6 | 1 | | | | | 9 | 1 | | 2 | | | 26 | | | 6 | 1 | | 2 | | | 2 | | | 1 | | | | |
| 625 | | 2 | | | 1 | | | 2 | 1 | | 1 | 1 | | 7 | 2 | | 2 | | | 1 | | | 1 | | | | | | | |
| 635 | | 1 | 1 | | | | | 1 | 1 | | 1 | | | 5 | 1 | | 1 | | | 1 | | | | | | 1 | | | | |
| 645 | | | | | | | | | | | | | | 3 | 3 | | | | | 1 | | | | | | 1 | | | | |
| 655 | | 1 | | | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | |
| 665 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 2 | 32 | 2 | 2 | 38 | 0 | 2 | 56 | 3 | 1 | 60 | 3 | 3 | 145 | 9 | 3 | 151 | 2 | 4 | 33 | 0 | 0 | 40 | 0 | 0 | 15 | 0 | 0 | 17 | 0 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 66 Izembek Bay July 18, 1956 | | | | | | Sample No. 67 Izembek Bay July 19, 1956 | | | | | | Sample No. 68 Pavlof Bay July 19, 1956 | | | | | | Sample No. 69 Izembek Bay July 20, 1956 | | | | | | Sample No. 70 Izembek Bay July 23, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | |
| 515 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 | |
| 535 | | | | | | | | 1 | | 1 | 1 | | 1 | | | | | | | | | | | | | 1 | | | 1 | |
| 545 | | 2 | | 1 | 1 | | 1 | | | | 2 | | | 2 | | | | | | 1 | | | 3 | | 1 | | | 1 | |
| 555 | | | | | 6 | | | 5 | | | 2 | | | | | | | | | 3 | | | 2 | | 1 | 1 | | 3 | |
| 565 | | 3 | | 1 | 4 | | 1 | 2 | | | 3 | | | 2 | | | 2 | | 1 | 1 | | | 4 | | | 3 | | | | |
| 575 | | 7 | | | 4 | | | 3 | | | 12 | | | 1 | | | 3 | | | 2 | | 1 | 7 | | 1 | 1 | | | 3 | |
| 585 | | 4 | | | 7 | 1 | | 4 | | | 6 | | | 3 | | | 7 | | | 10 | | | 6 | | | 2 | | | 6 | |
| 595 | | 8 | | | 6 | 1 | | 6 | | | 3 | | | 1 | | | 1 | | | 9 | | | 7 | | | 9 | | | 8 | |
| 605 | | 7 | | | 3 | | | 7 | | | 4 | | | 4 | | | 3 | 1 | | 4 | | | 1 | | | 5 | | | 7 | 1 |
| 615 | | 3 | | | 2 | | | 3 | | | 2 | | | 2 | | | | | | 1 | | | 3 | | | 3 | 1 | | 5 | |
| 625 | | 1 | | | 1 | | | 1 | | | 2 | | | | | | | | | 2 | 1 | | 1 | | | 3 | | | 2 | |
| 635 | | 1 | | | 1 | 1 | | 1 | | | 1 | | | 1 | | | | | | 2 | | | 1 | | | 1 | | | | 1 |
| 645 | | 2 | 1 | | | | | 3 | | | | | | | | | | 1 | | | 1 | | | | | 3 | | | 1 | |
| 655 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 665 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 39 | 1 | 2 | 35 | 3 | 2 | 36 | 1 | 1 | 38 | 0 | 2 | 16 | 0 | 0 | 16 | 2 | 2 | 35 | 2 | 2 | 36 | 0 | 3 | 33 | 1 | 0 | 38 | 2 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 71 Izembek Bay July 24, 1956 | | | | | | Sample No. 72 Pavlof Bay July 27, 1956 | | | | | | Sample No. 73 Pavlof Bay July 30, 1956 | | | | | | Sample No. 74 Izembek Bay July 30, 1956 | | | | | | Sample No. 75 Cape Lutke June 20-21, 1957 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | 4 | | | 1 | 1 | | | | | 1 | | | | | | | | 1 |
| 515 | | | | | 1 | | | | | | | | | 1 | | | 1 | | | | | | | | 1 | | | 2 | | |
| 525 | 1 | 1 | | | 1 | | | | | | | | 1 | 3 | | 2 | 2 | | | 1 | | | | | | | | | 2 | |
| 535 | | 1 | | | 1 | | | 1 | | | | | 2 | 5 | | | 3 | | | | | | | | 1 | | | 1 | 5 | 1 |
| 545 | | 1 | | | | | | | | 2 | 2 | | | 2 | | | 3 | | 2 | | | | 2 | | | 2 | | 1 | 4 | |
| 555 | 1 | 1 | | | 2 | | | 4 | | | 1 | | | 6 | | | 2 | | 3 | | | | 5 | | 1 | 2 | 1 | | 5 | 2 |
| 565 | | 1 | | | 2 | | | 2 | | | 2 | | | 3 | | | 4 | | 1 | | | | 1 | | 1 | 2 | | | 5 | 2 |
| 575 | 1 | 6 | | | 5 | | | 3 | | | 4 | 1 | | 1 | | | 6 | | | 3 | | 1 | 1 | | | 3 | | | 4 | 1 |
| 585 | | 5 | | | 5 | | | 4 | | | 10 | | | 4 | | | 8 | | 1 | 3 | | | 7 | 1 | | 2 | 2 | | 2 | 4 |
| 595 | 1 | 6 | | | 10 | 2 | | 6 | | | 6 | | | 1 | | | 2 | | | 3 | | | 9 | | | 3 | 2 | | | 2 |
| 605 | | 2 | | | 6 | | | 7 | | | 2 | | | 1 | | | 2 | | | 5 | | | 8 | | | | 3 | | 4 | 1 |
| 615 | | 5 | | | 1 | 1 | | 2 | | | 5 | | | 3 | | | 1 | | | 8 | | | 3 | 1 | | 1 | 1 | | | |
| 625 | | 3 | | | | | | 7 | | | 1 | | | 2 | | | 1 | | | 3 | 1 | | | | | 3 | 2 | | | 1 |
| 635 | | 1 | | | | 1 | | 2 | | | 1 | | | | | | | | | 1 | | | | | | | 1 | | 1 | |
| 645 | | 2 | | | | | | 2 | | | 1 | | | | | | | | | 1 | | | | | | | | | | |
| 655 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 665 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 4 | 36 | 0 | 0 | 34 | 4 | 0 | 40 | 0 | 2 | 35 | 1 | 7 | 32 | 0 | 3 | 36 | 0 | 7 | 28 | 1 | 2 | 36 | 2 | 4 | 18 | 12 | 4 | 32 | 15 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 76 East Anchor Cove-Ikatan Bay June 21-22, 1957 | | | | | | Sample No. 77 Ivanof Bay June 30, 1957 | | | | | | Sample No. 78 Izembek Bay July 3-9, 1957 | | | | | | Sample No. 79 St. Catherine Cove July 8 and 12 1957 | | | | | | Sample No. 80 Izembek Bay July 16-17, 1957 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | 1 | | | | 1 | | 1 | | | | | | | | |
| 525 | 2 | | | | 1 | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | |
| 535 | 2 | 1 | | | 5 | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| 545 | | 1 | | | 3 | 2 | | | | | | | 1 | 2 | | | | | 1 | 1 | 1 | | 2 | | | | | | | |
| 555 | | 2 | | | 6 | 1 | | | | | | | 1 | | | | 1 | | | 3 | | | 4 | | | 1 | | | 1 | |
| 565 | | 1 | | | 2 | 1 | | 1 | | | 2 | | | 1 | | | 2 | | 2 | 1 | | | 7 | | 1 | 1 | | | 1 | |
| 575 | | 3 | 1 | | 4 | 2 | | 1 | 1 | | 1 | 2 | | | 1 | | 4 | 1 | | 2 | | | 6 | | | | | 1 | 6 | |
| 585 | | 3 | 2 | | 7 | | | 2 | 1 | | 3 | 3 | 1 | 4 | 1 | | 9 | 1 | 1 | 3 | 2 | | 9 | 3 | | 2 | | | 2 | |
| 595 | | 5 | 3 | | | | | | 2 | | 2 | 2 | | 5 | | | 7 | 3 | | 8 | 2 | | 6 | 2 | 1 | 4 | | | 3 | 1 |
| 605 | | 4 | 1 | | | 1 | | 1 | 1 | | 2 | 3 | | 6 | | | 9 | 2 | | 9 | 3 | | 4 | 4 | | 4 | 3 | | 5 | 2 |
| 615 | | 5 | 2 | | 1 | | | 2 | 3 | | 1 | 4 | | 5 | 2 | | 1 | 5 | | 3 | 4 | | 9 | 4 | | 3 | 1 | | 3 | 3 |
| 625 | | 5 | 1 | | | | | 3 | 3 | | 3 | 2 | | 5 | 4 | | | 3 | | 6 | 2 | | 3 | 5 | | 3 | 2 | | 1 | 3 |
| 635 | | 1 | 1 | | | | | 3 | | | | 1 | | 5 | 1 | | | 3 | | 6 | 1 | | | 3 | | 1 | 2 | | 2 | 1 |
| 645 | | 3 | 3 | | | | | 1 | 5 | | | 1 | | 2 | 4 | | | 2 | | 4 | 2 | | | | | 2 | 1 | | | |
| 655 | | | | | | | | | 1 | | | 1 | | 2 | 2 | | | | | 1 | 6 | | | 1 | | 2 | 2 | | | 2 |
| 665 | | | 1 | | | | | | 2 | | | 2 | | 1 | 1 | | | 2 | | 2 | | | | 1 | | 1 | 1 | | | 1 |
| 675 | | | | | | | | | 3 | | | | | | 1 | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| 695 | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 4 | 34 | 15 | 0 | 29 | 7 | 0 | 15 | 22 | 0 | 14 | 21 | 3 | 38 | 17 | 1 | 34 | 22 | 5 | 51 | 23 | 1 | 50 | 23 | 2 | 25 | 12 | 2 | 24 | 13 |

Table A-2. --Length frequencies of Alaska Peninsula chum salmon by age (in years) and sex, 1951-57 - Continued

| Length by centimeter group (mm.) | Sample No. 81 East Anchor Cove-Ikatan Bay July 25, 1957 | | | | | |
|---|---|---|---|---|---|---|
| | Sex and age | | | | | |
| | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | 1 | | 1 | | |
| 515 | | | | | | |
| 525 | 1 | 1 | | 1 | | |
| 535 | | | | 2 | 2 | |
| 545 | 1 | | | 1 | 2 | |
| 555 | | 3 | | | 2 | |
| 565 | 1 | 1 | | | | |
| 575 | 3 | 1 | | 1 | 1 | |
| 585 | 2 | 2 | | | 1 | |
| 595 | 1 | 1 | 2 | | 5 | |
| 605 | 1 | 3 | | | 5 | |
| 615 | | 1 | | | 7 | |
| 625 | | 4 | | | 4 | |
| 635 | | 1 | | | 1 | |
| 645 | | 3 | | | | |
| 655 | | 1 | 1 | | | |
| 665 | | | 1 | | | |
| 675 | | | | | | |
| 685 | | 1 | 1 | | | |
| 695 | | | | | | |
| 705 | | | | | | |
| 715 | | | | | | |
| 725 | | | | | | |
| 735 | | | | | | |
| 745 | | | | | | |
| 755 | | | | | | |
| 500 | | | | | | |
| 759 | | | | | | |
| Total | 10 | 24 | 5 | 6 | 30 | 0 |

Table A-3. Chum salmon sex ratios, Alaska Peninsula area, 1951-57

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1951 | | | | |
| June 20 | 1 - Cape Lutke | 87 | 96 | 183 |
| July 10 and 14 | 2 - East Anchor Cove-Ikatan Bay | 215 | 242 | 457 |
| July 17 and 20 | 3 - East Anchor Cove-Ikatan Bay | 157 | 201 | 358 |
| July 27-30 | 4 - Shumagin Islands | 308 | 245 | 553 |
| Total | | 767 | 784 | 1,551 |
| Percent | | 49.4 | 50.6 | 100.0 |
| 1952 | | | | |
| July 19 | 5 - Shumagin Islands | 44 | 40 | 84 |
| July 21 | 6 - Shumagin Islands | 115 | 114 | 229 |
| July 22 | 7 - Shumagin Islands | 67 | 53 | 120 |
| July 24 | 8 - Shumagin Islands | 52 | 47 | 99 |
| July 25 | 9 - Shumagin Islands | 67 | 48 | 115 |
| Total | | 345 | 302 | 647 |
| Percent | | 53.3 | 46.7 | 100.0 |
| 1953 | | | | |
| June 8-14 | 10 - Cape Lutke | 98 | 101 | 199 |
| June 15 and 17 | 11 - Cape Lutke | 38 | 35 | 73 |
| June 20 | 12 - Cape Lutke | 66 | 60 | 126 |
| June 20 | 13 - East Anchor Cove-Ikatan Bay | 81 | 73 | 154 |
| June 22 | 14 - East Anchor Cove-Ikatan Bay | 67 | 61 | 128 |
| June 29-30 | 15 - Chignik Bay | 319 | 172 | 491 |
| June 30 | 16 - East Anchor Cove-Ikatan Bay | 121 | 114 | 235 |
| July 2 | 17 - East Anchor Cove-Ikatan Bay | 108 | 102 | 210 |
| July 7 and 10 | 18 - Shumagin Islands | 246 | 215 | 461 |
| July 17 | 19 - Shumagin Islands | 117 | 121 | 238 |
| July 21 | 20 - Shumagin Islands | 116 | 87 | 203 |
| July 24 | 21 - Shumagin Islands | 122 | 100 | 222 |
| July 27 | 22 - Shumagin Islands | 115 | 121 | 236 |
| Total | | 1,614 | 1,362 | 2,976 |
| Percent | | 54.2 | 45.8 | 100.0 |

Table A-3. Chum salmon sex ratios, Alaska Peninsula area, 1951-57 -- Continued

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1954 | | | | |
| June 10-20 | 23 - Cape Lutke | 226 | 240 | 466 |
| June 18 | 24 - Kujulik Bay | 41 | 41 | 82 |
| June 18-22 | 25 - East Anchor Cove-Ikatan Bay | 161 | 141 | 302 |
| June 22 | 26 - Kujulik Bay | 79 | 69 | 148 |
| June 23-24 | 27 - Chignik Lagoon | 50 | 40 | 90 |
| June 25-27 | 28 - Chignik Lagoon | 60 | 60 | 120 |
| June 27 | 29 - Chignik Bay | 60 | 58 | 118 |
| June 30 | 30 - Kujulik Bay | 40 | 40 | 80 |
| July 5-9 | 31 - East Anchor Cove-Ikatan Bay | 180 | 115 | 295 |
| July 7 | 32 - Aniakchak Bay | 46 | 44 | 90 |
| July 9-10 | 33 - Herendeen Bay | 97 | 98 | 195 |
| July 14 | 34 - Herendeen Bay | 20 | 20 | 40 |
| July 15 | 35 - Bear River | 19 | 21 | 40 |
| July 16 | 36 - Moller Bay | 14 | 13 | 27 |
| July 16 | 37 - Bear River | 80 | 74 | 154 |
| July 16 | 38 - Nelson Lagoon | 8 | 12 | 20 |
| July 19 | 39 - Bear River | 20 | 20 | 40 |
| July 24 | 40 - Herendeen Bay | 47 | 40 | 87 |
| July 25 | 41 - Nelson Lagoon | 20 | 20 | 40 |
| July 28 | 42 - Nelson Lagoon | 19 | 21 | 40 |
| Total | | 1,287 | 1,187 | 2,474 |
| Percent | | 52.0 | 48.0 | 100.0 |
| 1955 | | | | |
| June 14-18 | 43 - Cape Lutke | 50 | 36 | 86 |
| June 17-21 | 44 - East Anchor Cove-Ikatan Bay | 39 | 44 | 83 |
| June 26 | 45 - East Anchor Cove-Ikatan Bay | 16 | 10 | 26 |
| June 29 | 46 - East Anchor Cove-Ikatan Bay | 13 | 15 | 28 |
| July 1 | 47 - Izembek Bay | 37 | 35 | 72 |
| July 5 | 48 - Izembek Bay | 54 | 26 | 80 |
| July 7 | 49 - Izembek Bay | 21 | 29 | 50 |
| July 9 | 50 - Izembek Bay | 13 | 22 | 35 |
| July 12 | 51 - Izembek Bay | 51 | 50 | 101 |
| July 13 | 52 - Izembek Bay | 44 | 46 | 90 |
| July 13 | 53 - East Anchor Cove-Ikatan Bay | 0 | 0 | 0 |
| July 16-20 | 54 - Izembek Bay | 144 | 143 | 287 |
| July 17 | 55 - Pavlof Bay | 28 | 22 | 50 |
| July 20-23 | 56 - Pavlof Bay | 30 | 39 | 69 |
| Total | | 540 | 517 | 1,057 |
| Percent | | 51.1 | 48.9 | 100.0 |

Table A-3. Chum salmon sex ratios, Alaska Peninsula area, 1951-57 -- Continued

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1956 | | | | |
| June 18-22 | 57 - Cape Lutke | 26 | 14 | 40 |
| June 23 | 58 - East Anchor Cove-Ikatan Bay | 76 | 70 | 146 |
| June 25 | 59 - Cape Lutke | 55 | 63 | 118 |
| June 28-29 | 60 - Izembek Bay | 102 | 59 | 161 |
| June 30 | 61 - East Anchor Cove-Ikatan Bay | 98 | 80 | 178 |
| July 3-5 | 62 - East Anchor Cove-Ikatan Bay | 124 | 144 | 268 |
| July 9-13 | 63 - Izembek Bay | 438 | 305 | 743 |
| July 16 | 64 - Izembek Bay | 97 | 96 | 193 |
| July 17 | 65 - Izembek Bay | 17 | 18 | 35 |
| July 18 | 66 - Izembek Bay | 79 | 64 | 143 |
| July 19 | 67 - Izembek Bay | 47 | 45 | 92 |
| July 19 | 68 - Pavlof Bay | 20 | 19 | 39 |
| July 20 | 69 - Izembek Bay | 56 | 44 | 100 |
| July 23 | 70 - Izembek Bay | 70 | 68 | 138 |
| July 24 | 71 - Izembek Bay | 61 | 70 | 131 |
| July 27 | 72 - Pavlof Bay | 56 | 46 | 102 |
| July 30 | 73 - Pavlof Bay | 82 | 86 | 168 |
| July 30 | 74 - Izembek Bay | 37 | 48 | 85 |
| Total | | 1,541 | 1,339 | 2,880 |
| Percent | | 53.5 | 46.5 | 100.0 |
| 1957 | | | | |
| June 20-21 | 75 - Cape Lutke | 43 | 60 | 103 |
| June 21-22 | 76 - East Anchor Cove-Ikatan Bay | 119 | 76 | 195 |
| June 30 | 77 - Ivanof Bay | 129 | 47 | 176 |
| July 3-9 | 78 - Izembek Bay | 111 | 85 | 196 |
| July 8 and 12 | 79 - St. Catherine Cove | 197 | 211 | 408 |
| July 16-17 | 80 - Izembek Bay | 100 | 84 | 184 |
| July 25 | 81 - East Anchor Cove-Ikatan Bay | 101 | 80 | 181 |
| Total | | 800 | 643 | 1,443 |
| Percent | | 55.4 | 44.6 | 100.0 |

# APPENDIX

B. Biological Statistics for Chum Salmon, Kodiak Island area, 1948-51 and 1955-57

Table B-1. --Particulars of measurements and scale samples of chum salmon taken in Kodiak commercial catch, 1948-1951 and 1955-1957
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1948 | | | | | | | | |
| June 22 | 1 - Karluk Beach | BS | 71 | 30 | 101 | 10 | 5 | 15 |
| July 29 | 2 - Spiridon Bay | PS | 101 | 105 | 206 | 28 | 27 | 55 |
| August 4 | 3 - Uyak Bay | T | 102 | 100 | 202 | 23 | 29 | 52 |
| August 5 | 4 - Uyak Bay | T | 65 | 68 | 133 | 26 | 29 | 55 |
| August 7 | 5 - Uyak Bay | T | 98 | 102 | 200 | 28 | 30 | 58 |
| Total | | | 437 | 405 | 842 | 115 | 120 | 235 |
| 1949 | | | | | | | | |
| July 7 | 6 - Olga and Moser Bays | GN | 60 | 100 | 160 | 28 | 27 | 55 |
| July 12 and 15 | 7 - Kaguyak Bay | PS | 90 | 47 | 137 | 29 | 26 | 55 |
| July 16 | 8 - Kiliuda Bay | PS | 101 | 77 | 178 | 27 | 26 | 53 |
| July 25 | 9 - Uganik Bay | PS | 100 | 100 | 200 | 29 | 29 | 58 |
| July 28 | 10 - Spiridon Bay | PS | 99 | 101 | 200 | 29 | 24 | 53 |
| July 30 | 11 - East Uyak Bay | T | 99 | 101 | 200 | 23 | 23 | 46 |
| Total | | | 549 | 526 | 1,075 | 165 | 155 | 320 |
| 1950 | | | | | | | | |
| July 12 | 12 - Raspberry Island | T | 50 | 50 | 100 | 20 | 18 | 38 |
| August 3 | 13 - East Uyak Bay | T | 83 | 100 | 183 | 20 | 19 | 39 |
| August 8 | 14 - Head Uyak Bay | PS | 59 | 51 | 110 | 18 | 19 | 37 |
| Total | | | 192 | 201 | 393 | 58 | 56 | 114 |

Table B-1. --Particulars of measurements and scale samples of chum salmon taken in Kodiak commercial catch, 1948-1951 and 1955-1957 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1951 | | | | | | | | |
| August 4 | 15 - Uganik Bay | T | 62 | 59 | 121 | 19 | 18 | 37 |
| Total | | | 62 | 59 | 121 | 19 | 18 | 37 |
| 1955 | | | | | | | | |
| July 12 | 16 - Spiridon Bay | PS | 10 | 41 | 51 | 10 | 37 | 47 |
| July 14 | 17 - Zachar Bay | PS | 52 | 64 | 116 | 37 | 34 | 71 |
| July 19 | 18 - Spiridon Bay | PS | 84 | 80 | 164 | 83 | 77 | 160 |
| July 20 | 19 - Spiridon Bay | PS | 17 | 24 | 41 | 16 | 20 | 36 |
| Total | | | 163 | 209 | 372 | 146 | 168 | 314 |
| 1956 | | | | | | | | |
| July 13 | 20 - Zachar Bay | PS | 42 | 40 | 82 | 19 | 18 | 37 |
| July 21 | 21 - South Uyak Bay | PS | 118 | 93 | 211 | 19 | 20 | 39 |
| Total | | | 160 | 133 | 293 | 38 | 38 | 76 |
| 1957 | | | | | | | | |
| July 8 | 22 - South Uyak Bay | PS | 33 | 19 | 52 | 14 | 16 | 30 |
| July 9 | 23 - Zachar Bay | PS | 36 | 23 | 59 | 36 | 20 | 56 |
| July 9 | 24 - South Uyak Bay | PS | 93 | 85 | 178 | 17 | 18 | 35 |
| July 23 | 25 - South Uyak Bay | PS | 91 | 110 | 201 | 49 | 47 | 96 |
| July 26 | 26 - Spiridon Bay | PS | 108 | 128 | 236 | 35 | 33 | 68 |
| Total | | | 361 | 365 | 726 | 151 | 134 | 285 |

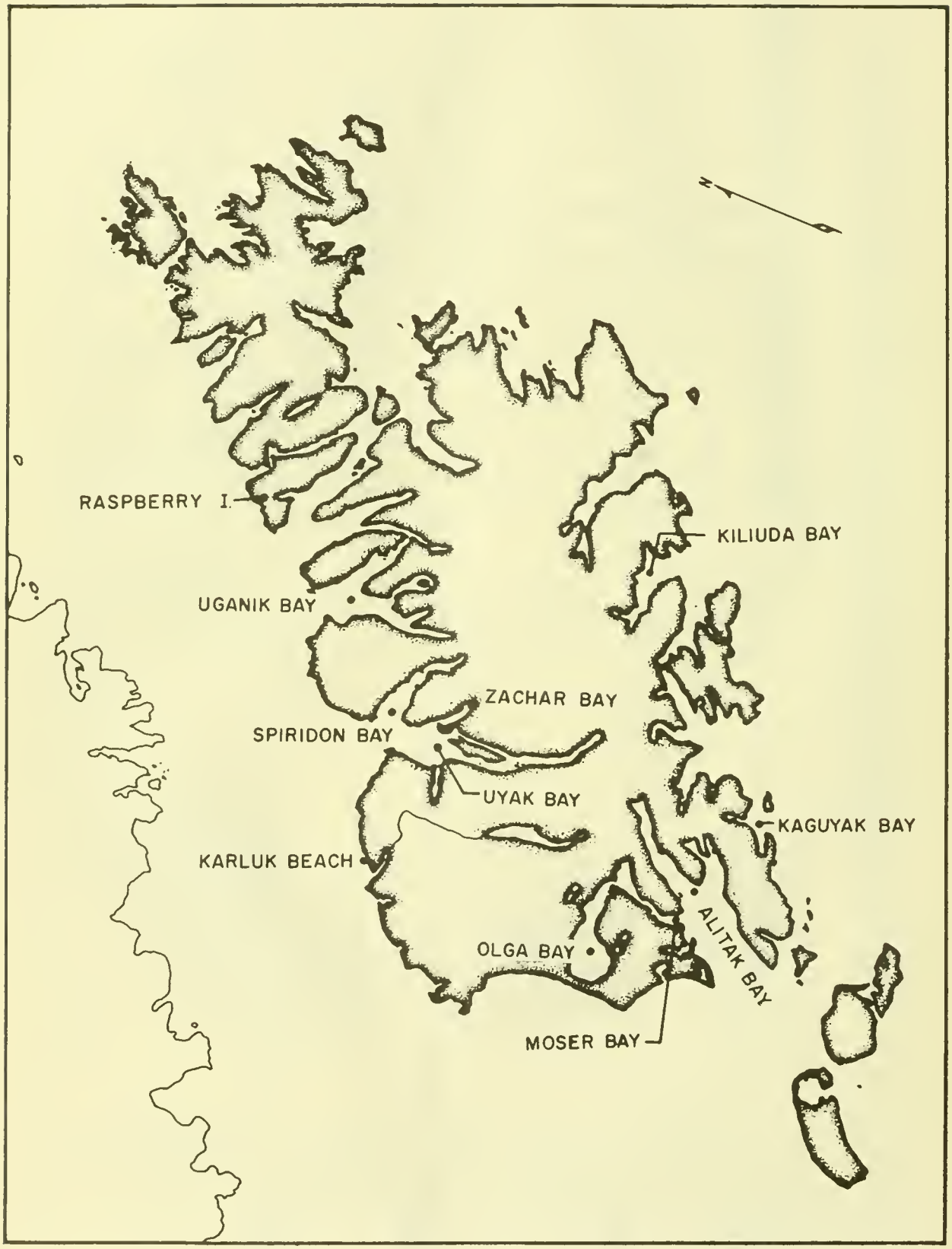



Figure B-1.--Localities where chum salmon samples were taken in Kodiak Island commercial catch, 1948-51 and 1955-57.

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57.

| Length by centimeter group (mm.) | Sample No. 1 Karluk Beach June 22, 1948 | | | | | | Sample No. 2 Spiridon Bay July 29, 1948 | | | | | | Sample No. 3 Uyak Bay August 4, 1948 | | | | | | Sample No. 4 Uyak Bay August 5, 1948 | | | | | | Sample No. 5 Uyak Bay August 7, 1948 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | | | | |
| 525 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 | | | | |
| 535 | | | | | | | | | | | | | | 1 | | | | 1 | | | | 1 | 1 | | 1 | | | 1 | | 3 |
| 545 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | |
| 555 | | | | | | | | | | | 1 | | | | | 2 | 2 | | | 1 | | | 1 | | | 2 | | | 1 | |
| 565 | | 2 | | | | | | | | | 1 | | | 2 | | | 1 | | | 2 | | | 3 | | 2 | 2 | | 1 | 2 | |
| 575 | | | | | 1 | | | | | | | | 1 | 2 | | | 3 | 1 | | 2 | | | 2 | | | 1 | 1 | | 3 | |
| 585 | | | | | 1 | | 2 | | | | 1 | | | 2 | | | 3 | 1 | | 1 | 1 | | 1 | | | 1 | 1 | 1 | 3 | |
| 595 | | 1 | | | 3 | | | 1 | | | 2 | | 2 | | | 1 | 4 | | | 4 | | | 2 | 2 | | 2 | | | 3 | |
| 605 | | 1 | 1 | | | | | 2 | | | | 1 | | | 1 | | 5 | 2 | | 1 | 2 | 1 | 1 | 2 | | 3 | | | 2 | |
| 615 | | | | | | | | 2 | | | 3 | | 2 | 1 | | | | | | 2 | 2 | | 1 | 2 | | | 1 | | 3 | 1 |
| 625 | | | | | | | 1 | 1 | | | 2 | | | 2 | | | | | | | | | 1 | 4 | | | | | 1 | 1 |
| 635 | | 1 | | | | | | 1 | 1 | | | 2 | | 1 | | | | 1 | | 1 | 4 | | | 2 | | | | | 1 | 1 |
| 645 | | | | | | | | 4 | 1 | | 1 | 5 | | 1 | | | | 2 | | | | | | | | 1 | | | | |
| 655 | | 1 | 2 | | | | | 1 | 3 | | 2 | 3 | | | | | | | | | 2 | | | 1 | | | 1 | | | |
| 665 | | | 1 | | | | | 2 | 2 | | | | | | | | | | | | | | | 1 | | | | | | |
| 675 | | | | | | | | | | | | 3 | | | 2 | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | 2 | | | | | | 1 | | | | | | 1 | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| 735 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 6 | 4 | 0 | 5 | 0 | 3 | 14 | 11 | 0 | 13 | 14 | 6 | 12 | 5 | 3 | 18 | 8 | 0 | 14 | 12 | 2 | 13 | 14 | 6 | 17 | 4 | 3 | 20 | 6 |

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57 --Continued

| Length by centimeter group (mm.) | Sample No. 6 Olga and Moser Bays July 7, 1949 | | | | | | Sample No. 7 Kaguyak Bay July 12 and 15, 1949 | | | | | | Sample No. 8 Kiliuda Bay July 16, 1949 | | | | | | Sample No. 9 Mush Bay July 25, 1949 | | | | | | Sample No. 10 Spiridon Bay July 28, 1949 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | 1 | | | | | 1 | 1 | | | | | | | |
| 525 | | | | | 1 | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | |
| 535 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| 545 | | 1 | | | 1 | | | 2 | | | | | | 1 | | | 1 | | | | | | | | | | | | | |
| 555 | | 2 | | | 1 | | | | | | 1 | | | | | | 3 | | | 1 | | | 4 | | 1 | | | | | 1 |
| 565 | | 1 | | 1 | 3 | | | 1 | | | 5 | | | 1 | | | 1 | | | | | | 2 | | | 2 | | | | |
| 575 | | 5 | | | 4 | | | 2 | 1 | | 2 | | | 2 | 2 | | 5 | | | 1 | | | 1 | | | | | | 1 | 2 |
| 585 | | 4 | 2 | | 5 | | | 3 | 1 | | 3 | 1 | | 3 | 1 | | | | | | | | 2 | | | 1 | | | 1 | |
| 595 | | 4 | | | 5 | | | 4 | 1 | | 3 | 1 | | 3 | 2 | | 3 | 2 | | 2 | | | 3 | 1 | | 1 | | | 2 | 2 |
| 605 | | | 2 | | 1 | 1 | | 3 | 1 | | 2 | 1 | | 1 | 1 | | 2 | | | 3 | | | 2 | 1 | | 1 | | | | 2 |
| 615 | | 1 | | | 2 | | | 2 | 1 | | 3 | | | 2 | 1 | | 3 | 2 | | 5 | | | 1 | 1 | | | | | 1 | |
| 625 | | 1 | 1 | | 2 | | | 1 | | | | 1 | | 1 | 1 | | 3 | | | 1 | | | 4 | 2 | | 1 | 2 | | 2 | 1 |
| 635 | | 3 | | | | | | 2 | 1 | | | | | | 1 | | | | | | 2 | | | | | | 3 | | | 1 |
| 645 | | | | | | | | | 1 | | | | | 1 | 2 | | | | | 4 | | | | 1 | | 3 | 1 | | | 2 |
| 655 | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | 6 | | | 1 |
| 665 | | 1 | | | | | | 2 | | | 1 | | | | | | | | | 1 | 1 | | | | | | 2 | | 2 | |
| 675 | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | 1 |
| 685 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 2 | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | 2 | | | 1 | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 23 | 5 | 1 | 25 | 1 | 0 | 22 | 7 | 0 | 21 | 4 | 0 | 15 | 12 | 0 | 22 | 4 | 3 | 20 | 6 | 3 | 20 | 6 | 1 | 9 | 19 | 0 | 10 | 14 |

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57 --Continued

| Length by centimeter group (mm.) | Sample No. 11 East Uyak Bay July 30, 1949 | | | | | | Sample No. 12 Raspberry Island July 15, 1950 | | | | | | Sample No. 13 Uyak Bay August 3, 1950 | | | | | | Sample No. 14 Uyak Bay August 8, 1950 | | | | | | Sample No. 15 Uganik Bay August 4, 1951 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | |
| 545 | | | | | | | | | | | | | | | | 2 | | | | 1 | | | | | | | | | | |
| 555 | | | | | 1 | | | 1 | | | | | | | | | 1 | | | | | | 1 | | | | 1 | | | 1 |
| 565 | | 1 | | | 2 | | | | | | 1 | | | | | | 1 | | | | | | 2 | | | | | | | |
| 575 | | 1 | 1 | | 1 | 2 | | 1 | | | 1 | | | 1 | | | 1 | | | 3 | | | 2 | | | | | 1 | | |
| 585 | | | 3 | | 3 | | | 2 | | | 2 | | | | | | 1 | | | 1 | | | | | | | | | | |
| 595 | | 2 | 1 | | 2 | 1 | | 2 | | | | 1 | | | 1 | | 2 | | | | | | 3 | | 1 | 2 | | | | 2 |
| 605 | | 1 | 1 | | 1 | | | | | | 1 | | | 1 | | | 4 | 1 | | 2 | | | | | | 1 | | | | 1 |
| 615 | | | 1 | | | 6 | | 1 | | | 3 | 1 | | 3 | 2 | | | | | | | | 1 | 1 | | | 1 | | | 1 |
| 625 | | 1 | 1 | | | | | | | | 1 | 3 | | 2 | | | | | | 2 | 1 | | 3 | | | 1 | | | 1 | 2 |
| 635 | | 1 | 2 | | | 2 | | 2 | 1 | | | 2 | | 1 | | | 1 | 4 | | 2 | 1 | | 2 | 2 | | | | | 2 | 2 |
| 645 | | 2 | 2 | | 1 | | | 1 | 1 | | 1 | | | 3 | | | | 1 | | | 1 | | | | | 3 | 1 | | | 2 |
| 655 | | | 1 | | | | | | 2 | | | 1 | | | 1 | | | | | | 1 | | | | | | 1 | | | |
| 665 | | | | | | | | 1 | | | | | | 3 | 1 | | | | | | | | 1 | | | 1 | | | 1 | | |
| 675 | | 1 | | | | | | 1 | 1 | | | | | | | | | | | | 1 | | | | | 2 | 1 | | | |
| 685 | | | | | 1 | | | | | | | | | | | | | | | | 1 | | | | | 1 | | | | |
| 695 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 1 | 1 | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 10 | 13 | 0 | 12 | 11 | 0 | 13 | 7 | 0 | 10 | 8 | 1 | 14 | 5 | 2 | 11 | 6 | 0 | 11 | 6 | 0 | 16 | 3 | 1 | 11 | 7 | 1 | 4 | 11 |

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57 --Continued

| Length by centimeter group (mm.) | Sample No. 16 Spiridon Bay July 12, 1955 | | | | | | Sample No. 17 Zachar Bay July 14, 1955 | | | | | | Sample No. 18 Spiridon Bay July 19, 1955 | | | | | | Sample No. 19 Spiridon Bay July 20, 1955 | | | | | | Sample No. 20 Zachar Bay July 13, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 555 | | | | | | | | | | | | | 2 | | | | | | | | | | | | | 1 | | | | |
| 565 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | |
| 575 | | | | | | | 1 | | | | | 1 | | | | | 1 | | | | | | 1 | | | 1 | | | | |
| 585 | | | | | 2 | | | | | | | 1 | | | | | 1 | | | | | | | | | 1 | | | 3 | |
| 595 | | 2 | | | | 1 | | | | | | | | | | | 2 | | | | | | 1 | | | 3 | | | | |
| 605 | | | | | | 1 | | | | | 3 | 1 | | 3 | | | 2 | | | | | | 1 | | | 2 | | | 2 | |
| 615 | | | | | 2 | 3 | | 2 | 1 | | 1 | 1 | | 3 | | | 6 | 1 | | 1 | | | | | | 2 | | | 10 | |
| 625 | | | | | 3 | | | 1 | | | 1 | 3 | | 1 | 1 | | 7 | 3 | | | | | 3 | 1 | | 2 | | | 2 | |
| 635 | | | | | 3 | 4 | | 1 | 1 | | 4 | 4 | | 3 | | | 9 | 2 | | 1 | | | | 2 | | 1 | | | | |
| 645 | | 1 | | | 1 | 4 | | 1 | 4 | | 3 | 3 | | 4 | 1 | | 5 | 4 | | 1 | | | 3 | 1 | | 2 | | | | |
| 655 | | 1 | 1 | | | 3 | | 2 | 1 | | 1 | 2 | | 8 | 6 | | 4 | 6 | | 1 | 1 | | 1 | 1 | | | | | | |
| 665 | | 1 | | | 1 | 6 | | | 3 | | | | | 5 | 3 | | 2 | 4 | | 4 | | | 2 | 1 | | | 1 | | | |
| 675 | | | | | 1 | 1 | | | 3 | | | 1 | | 4 | 1 | | 3 | 7 | | | 1 | | 1 | 1 | | | | | | |
| 685 | | | | | | 1 | | | 4 | | | 3 | | 3 | 4 | | 5 | 2 | | | 1 | | | | | | 1 | | | |
| 695 | | | 2 | | | | | 1 | 4 | | | 1 | | 7 | | | | 1 | | 2 | | | | | | | | | | |
| 705 | | 1 | | | | | | | 1 | | | | | 6 | 6 | | | | | | 1 | | | | | | | | | |
| 715 | | 1 | | | | | | 1 | 1 | | | | | 2 | 2 | | | | | 1 | | | | | | | | | | |
| 725 | | | | | | | | | 3 | | | | | 4 | 2 | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | 1 | | | | | | 1 | | | | | 1 | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 7 | 3 | 0 | 13 | 24 | 1 | 9 | 27 | 0 | 13 | 21 | 3 | 53 | 27 | 0 | 47 | 30 | 0 | 12 | 4 | 0 | 13 | 7 | 1 | 16 | 2 | 0 | 18 | 0 |

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57 --Continued

| Length by centimeter group (mm.) | Sample No. 21 South Uyak Bay July 21, 1956 | | | | | | Sample No. 22 South Uyak Bay July 8, 1957 | | | | | | Sample No. 23 Zachar Bay July 9, 1957 | | | | | | Sample No. 24 South Uyak Bay July 9, 1957 | | | | | | Sample No. 25 South Uyak Bay July 23, 1957 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| 555 | | 1 | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 565 | | | | | 1 | | | | | | | | | 2 | | | | 1 | | 1 | | | | | | | | | 1 | |
| 575 | | | | | | | | 1 | | | | | | 1 | | | | | | | | | 2 | | | 1 | | | 5 | 2 |
| 585 | | 1 | | | 1 | 1 | | | | | 2 | | | 1 | | | | | | | | | 2 | | | 2 | | | 3 | 1 |
| 595 | | 1 | | 1 | 1 | | | | | | 1 | | | 1 | | | | | | 3 | | | 1 | | | 2 | | | 5 | 1 |
| 605 | | 4 | | | 2 | | | 1 | | | 3 | | | 6 | | 4 | 1 | | | 1 | 1 | | 1 | 3 | | 5 | | | 5 | 2 |
| 615 | | 4 | | | 4 | | | | | | 1 | 1 | | 4 | | | | | | 1 | | | | | | 5 | 1 | | 6 | 2 |
| 625 | | 2 | | | 1 | | | | | | 1 | | | 2 | | | 2 | 1 | | 1 | | | 1 | | | 5 | 1 | | 6 | 3 |
| 635 | | 1 | | | 1 | | | 1 | | | 2 | 1 | | 3 | | | 1 | 4 | | 1 | 1 | | 1 | 1 | | 3 | | | 4 | |
| 645 | | 1 | 1 | | | | | 1 | | | 1 | | | 3 | 1 | | | 1 | | 1 | 1 | | 1 | 1 | | 8 | 2 | | | |
| 655 | | | | | 2 | 1 | | 1 | | | 2 | | | 3 | | | 1 | 2 | | 1 | 2 | | 1 | 1 | | 5 | 1 | | | |
| 665 | | | | | 1 | | | 2 | 1 | | | | | 2 | | | 1 | | | | | | | | | 1 | 1 | | | 1 |
| 675 | | | | | | | | 1 | 1 | | | | | 3 | | | | 1 | | | 1 | | | 1 | | | 1 | | | |
| 685 | | 1 | 1 | | | 1 | | 1 | 1 | | | | | | | | | | | | 1 | | | | | 2 | 2 | | | |
| 695 | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 17 | 2 | 1 | 15 | 3 | 1 | 9 | 4 | 0 | 14 | 2 | 0 | 35 | 1 | 0 | 9 | 11 | 0 | 10 | 8 | 0 | 10 | 7 | 1 | 39 | 9 | 0 | 35 | 12 |

Table B-2. --Length frequencies of Kodiak area chum salmon by age (in years) and sex, 1948-51 and 1955-57 --Continued

| Length by centimeter group (mm.) | Sample No. 26 Spiridon Bay July 26, 1957 | | | | | |
|---|---|---|---|---|---|---|
| | Sex and age | | | | | |
| | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | |
| 515 | | | | | | |
| 525 | | | | | | |
| 535 | | | | | | |
| 545 | 1 | | | | | |
| 555 | | | | | | |
| 565 | | | | | | |
| 575 | 1 | | | | | |
| 585 | 1 | | | | 2 | |
| 595 | | 4 | | | 3 | |
| 605 | 1 | 1 | | | 6 | |
| 615 | 1 | 1 | | | 3 | |
| 625 | 1 | 5 | | | 5 | |
| 635 | | 3 | | | 6 | |
| 645 | | 3 | | | 4 | |
| 655 | | 2 | | | | |
| 665 | | 3 | | | 2 | |
| 675 | | 3 | 1 | | 2 | |
| 685 | | 2 | 1 | | | |
| 695 | | | | | | |
| 705 | | | | | | |
| 715 | | | | | | |
| 725 | | | | | | |
| 735 | | | | | | |
| 745 | | | | | | |
| 755 | | | | | | |
| < 500 | | | | | | |
| > 759 | | | | | | |
| Total | 6 | 27 | 2 | 0 | 33 | 0 |

Table B-3. Chum salmon sex ratios for the Kodiak area, 1948-51 and 1955-57

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1948 | | | | |
| June 22 | 1 - Karluk Beach | 70 | 30 | 100 |
| July 29 | 2 - Spiridon Bay | 101 | 73 | 174 |
| August 4 | 3 - Uyak Bay | 85 | 100 | 185 |
| August 5 | 4 - Uyak Bay | 64 | 68 | 132 |
| August 7 | 5 - Uyak Bay | 65 | 102 | 167 |
| Total | | 385 | 373 | 758 |
| Percent | | 50.8 | 49.2 | 100.0 |
| 1949 | | | | |
| July 7 | 6 - Olga and Moser Bays | 36 | 100 | 136 |
| July 12 and 15 | 7 - Kaguyak Bay | 90 | 46 | 136 |
| July 16 | 8 - Kiliuda Bay | 100 | 69 | 169 |
| July 25 | 9 - Mush Bay | 100 | 88 | 188 |
| July 28 | 10 - Spiridon Bay | 50 | 32 | 82 |
| July 30 | 11 - East Uyak Bay | 93 | 100 | 193 |
| Total | | 469 | 435 | 904 |
| Percent | | 51.9 | 48.1 | 100.0 |
| 1950 | | | | |
| July 15 | 12 - Rasberry Island | 65 | 47 | 112 |
| August 3 | 13 - East Uyak Bay | 83 | 100 | 183 |
| August 8 | 14 - Head Uyak Bay | 52 | 66 | 118 |
| Total | | 200 | 213 | 413 |
| Percent | | 48.4 | 51.6 | 100.0 |
| 1951 | | | | |
| August 4 | 15 - Uganik Bay | 62 | 75 | 137 |
| Total | | 62 | 75 | 137 |
| Percent | | 45.3 | 54.7 | 100.0 |

Table B-3. Chum salmon sex ratios
for the Kodiak area, 1948-51 and 1955-57 -- Continued

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1955 | | | | |
| July 12 | 16 - Spiridon Bay | 10 | 26 | 36 |
| July 14 | 17 - Zachar Bay | 52 | 64 | 116 |
| July 19 | 18 - Spiridon Bay | 84 | 80 | 164 |
| July 20 | 19 - Spiridon Bay | 17 | 24 | 41 |
| Total | | 163 | 194 | 357 |
| Percent | | 45.7 | 54.3 | 100.0 |
| 1956 | | | | |
| July 13 | 20 - Zachar Bay | 67 | 62 | 129 |
| July 21 | 21 - South Uyak Bay | 115 | 91 | 206 |
| Total | | 182 | 153 | 335 |
| Percent | | 54.3 | 45.7 | 100.0 |
| 1957 | | | | |
| July 8 | 22 - South Uyak Bay | 35 | 19 | 54 |
| July 9 | 23 - Zachar Bay | 38 | 24 | 62 |
| July 9 | 24 - South Uyak Bay | 93 | 85 | 178 |
| July 23 | 25 - South Uyak Bay | 90 | 108 | 198 |
| July 26 | 26 - Spiridon Bay | 113 | 132 | 245 |
| Total | | 369 | 366 | 735 |
| Percent | | 50.2 | 49.8 | 100.0 |

# APPENDIX

C. Biological Statistics for Chum Salmon, Prince William Sound area, 1952-58

Table C-1. --Particulars of measurements and scale samples taken in the Prince William Sound commercial fishery, 1952-1953 and 1956-1958 (BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1952 | | | | | | | | |
| August 6 | 1 - Montague Island | T | 56 | 92 | 148 | 20 | 18 | 38 |
| August 12 | 2 - Port Gravina - Sheep Bay | PS | 82 | 100 | 182 | 19 | 20 | 39 |
| August 12 | 3 - Unakwik - Port Fidalgo | PS | 20 | 20 | 40 | 20 | 18 | 38 |
| Total | | | 158 | 212 | 370 | 59 | 56 | 115 |
| 1953 | | | | | | | | |
| July 15 | 4 - Montague Strait - Knight Island | T | 74 | 101 | 175 | 20 | 19 | 39 |
| July 21 | 5 - Montague Strait - Bainbridge Island | T | 94 | 99 | 193 | 19 | 18 | 37 |
| August 3 | 6 - Eshamy Bay | GN | 35 | 50 | 85 | 19 | 20 | 39 |
| August 5 | 7 - Montague Strait | T | 98 | 100 | 198 | 20 | 18 | 38 |
| August 5 | 8 - Port Chalmers - Knight Island Pass | PS | 50 | 74 | 124 | 18 | 18 | 36 |
| Total | | | 351 | 424 | 775 | 96 | 93 | 189 |
| 1956 | | | | | | | | |
| June 25 | 9 - Galena Bay | BS | 5 | 0 | 5 | 0 | 0 | 0 |
| June 27 | 10 - Unakwik Inlet | PS | 0 | 4 | 4 | 0 | 4 | 4 |
| July 10 | 11 - Port Wells | PS | 50 | 50 | 100 | 18 | 19 | 37 |
| July 10-11 | 12 - MacLeod Harbor-Point Helen | T | 50 | 50 | 100 | 18 | 16 | 34 |
| July 16-17 | 13 - Montague Strait - Knight Island Passage | T | 32 | 42 | 74 | 0 | 0 | 0 |
| July 19 | 14 - Port Wells | PS | 46 | 42 | 88 | 19 | 19 | 38 |
| July 19 | 15 - Valdez Arm | PS | 15 | 16 | 31 | 14 | 15 | 29 |

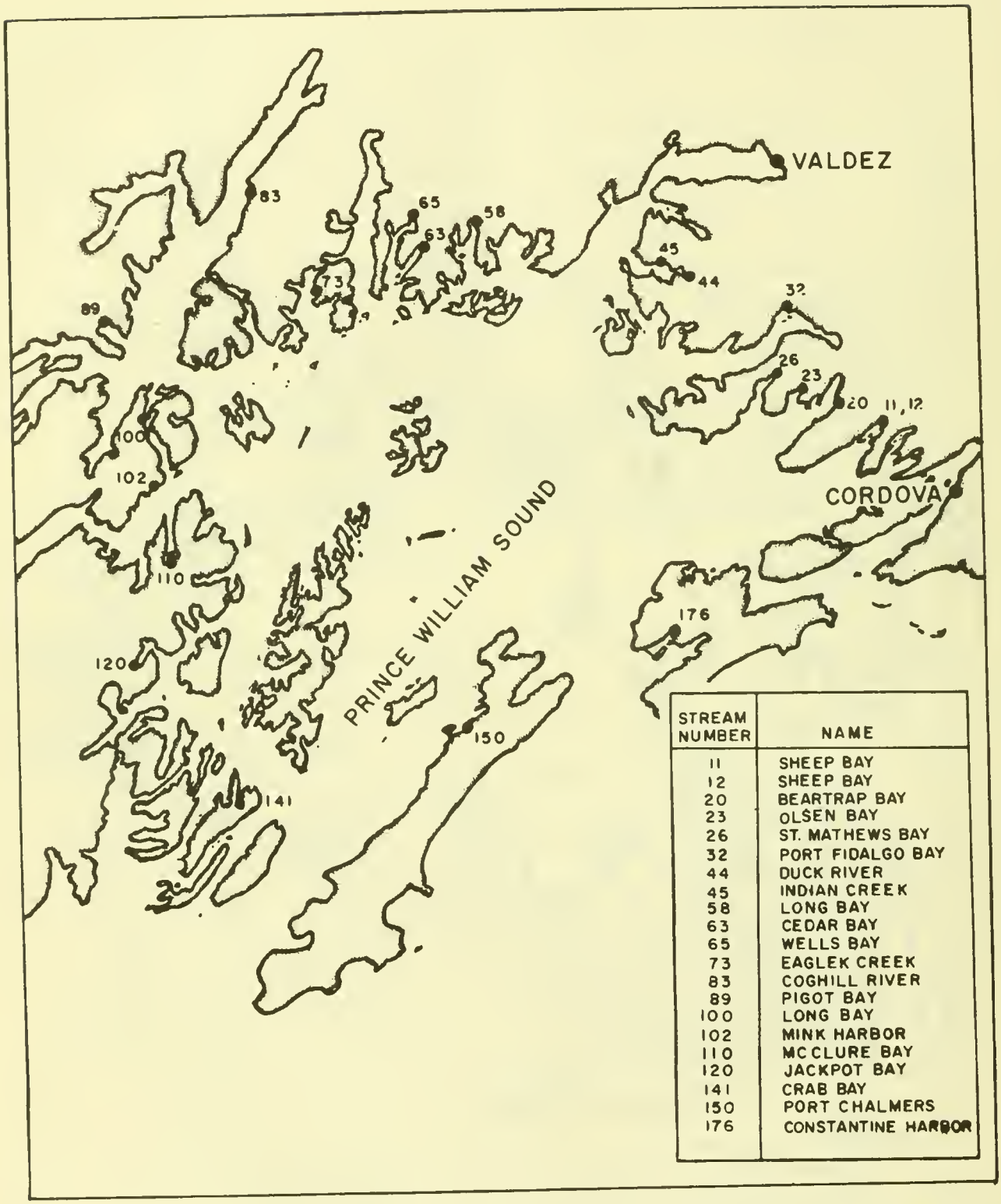
Table C-1. --Particulars of measurements and scale samples taken in the Prince William Sound commercial fishery, 1952-1953 and 1956-1958 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1956 continued | | | | | | | | |
| July 20 | 16 - MacLeod Harbor | T | 0 | 0 | 0 | 18 | 19 | 37 |
| July 20 | 17 - Valdez Arm | PS | 31 | 38 | 69 | 0 | 0 | 0 |
| July 24 | 18 - Montague Strait - Knight Island Passage | T | 74 | 74 | 148 | 18 | 20 | 38 |
| August 2 | 19 - Hinchinbrook Island - Ports Gravina and Fidalgo | T | 0 | 0 | 0 | 20 | 19 | 39 |
| August 3 | 20 - New England Fish Company - Ellamar | T | 50 | 47 | 97 | 19 | 20 | 39 |
| August 3 | 21 - Valdez - Port Fidalgo | PS | 48 | 50 | 98 | 20 | 20 | 40 |
| August 1 - 4 | 22 - Granite Bay Point | T | 23 | 20 | 43 | 20 | 18 | 38 |
| Total | | | 424 | 433 | 857 | 184 | 189 | 373 |
| 1957 | | | | | | | | |
| July 8 | 23 - Point Helen | T | 53 | 46 | 99 | 0 | 0 | 0 |
| July 9 | 24 - Point Helen | T | 13 | 13 | 26 | 0 | 0 | 0 |
| July 11 | 25 - Culross Island | PS | 5 | 4 | 9 | 0 | 0 | 0 |
| July 13 - 14 | 26 - Porcupine Point | T | 25 | 17 | 42 | 0 | 0 | 0 |
| July 14 | 27 - Point Freemantle | T | 45 | 25 | 70 | 0 | 0 | 0 |
| July 21 | 28 - Bainbridge Point | T | 12 | 8 | 20 | 0 | 0 | 0 |
| July 22 | 29 - North Twin Bay | PS | 2 | 2 | 4 | 0 | 0 | 0 |
| July 23 | 30 - Point Elrington | PS | 4 | 7 | 11 | 0 | 0 | 0 |
| July 26 | 31 - Montague Strait - Knight Island Passage | T | 48 | 51 | 99 | 19 | 19 | 38 |
| July 28 | 32 - MacLeod Harbor | T | 24 | 27 | 51 | 0 | 0 | 0 |
| July 31 | 33 - Kiniklik Point | T | 6 | 0 | 6 | 0 | 0 | 0 |

Table C-1. --Particulars of measurements and scale samples taken in the Prince William Sound commercial fishery, 1952-1953 and 1956-1958 -- Continued
(BS = Beach Seine, PS = Purse Seine, T = Trap, GN = Gill Net)

| Date | | Sample number and location | Gear used | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Male | Female | Total | Male | Female | Total |
| 1957 | continued | | | | | | | | |
| | August 3 | 34 - Gravina Point | T | 26 | 11 | 37 | 0 | 0 | 0 |
| | August 4 | 35 - Porcupine Point | T | 61 | 54 | 115 | 0 | 0 | 0 |
| | August 8 | 36 - Point Elrington | T | 13 | 17 | 30 | 0 | 0 | 0 |
| | August 10-11 | 37 - Bainbridge Point | T | 15 | 29 | 44 | 0 | 0 | 0 |
| | August 12 | 38 - MacLeod Harbor | PS | 2 | 0 | 2 | 0 | 0 | 0 |
| | August 13 | 39 - Zaikof Bay | BS | 1 | 0 | 1 | 0 | 0 | 0 |
| | Total | | | 355 | 311 | 666 | 19 | 19 | 38 |
| 1958 | | | | | | | | | |
| | July 6 | 40 - Culross Island | T | 15 | 11 | 26 | 15 | 9 | 24 |
| | July 7 | 41 - Point Helen | T | 10 | 15 | 25 | 4 | 5 | 9 |
| | July 8 | 42 - Point Helen | T | 13 | 21 | 34 | 0 | 0 | 0 |
| | July 9 | 43 - Point Freemantle | T | 11 | 15 | 26 | 0 | 0 | 0 |
| | July 12 | 44 - Johnstone Point | T | 38 | 42 | 80 | 20 | 19 | 39 |
| | July 14 | 45 - Point Helen | T | 23 | 27 | 50 | 16 | 18 | 34 |
| | July 15 | 46 - Point Elrington | PS | 3 | 12 | 15 | 0 | 0 | 0 |
| | July 16 | 47 - Point Elrington | PS | 1 | 0 | 1 | 0 | 0 | 0 |
| | July 20 | 48 - Point Freemantle | T | 107 | 83 | 190 | 0 | 0 | 0 |
| | July 23 | 49 - Johnstone Point | T | 37 | 33 | 70 | 0 | 0 | 0 |
| | July 29 | 50 - Kiniklik Point | PS | 13 | 14 | 27 | 0 | 0 | 0 |
| | July 30 | 51 - Point Freemantle | T | 34 | 29 | 63 | 0 | 0 | 0 |
| | August 3 | 52 - Johnstone Point | T | 20 | 10 | 30 | 15 | 10 | 25 |
| | August 6 | 53 - Point Helen | T | 9 | 5 | 14 | 6 | 4 | 10 |
| | August 7-8 | 54 - Point Elrington | PS | 1 | 2 | 3 | 0 | 0 | 0 |
| | Total | | | 335 | 319 | 654 | 76 | 65 | 141 |


Figure C-1.--Localities in Prince William Sound where chum salmon samples were taken in the commercial catch, 1952-53 and 1956-58.




| STREAM NUMBER | NAME |
|---|---|
| 11 | SHEEP BAY |
| 12 | SHEEP BAY |
| 20 | BEARTRAP BAY |
| 23 | OLSEN BAY |
| 26 | ST. MATHEWS BAY |
| 32 | PORT FIDALGO BAY |
| 44 | DUCK RIVER |
| 45 | INDIAN CREEK |
| 58 | LONG BAY |
| 63 | CEDAR BAY |
| 65 | WELLS BAY |
| 73 | EAGLEK CREEK |
| 83 | COGHILL RIVER |
| 89 | PIGOT BAY |
| 100 | LONG BAY |
| 102 | MINK HARBOR |
| 110 | MCCLURE BAY |
| 120 | JACKPOT BAY |
| 141 | CRAB BAY |
| 150 | PORT CHALMERS |
| 176 | CONSTANTINE HARBOR |

Figure C-2.--Stream locations in Prince William Sound where chum salmon spawning ground samples were taken, 1952-57.

Table C-2. --Particulars of measurements and scale samples taken from the Prince William Sound spawning grounds, 1952-1957
(E = Early, M = Middle, L = Late run streams)

| Date | Sample number and location [1/] | Timing | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1952 | | | | | | | | |
| August 15 | 1 - Sheep Bay (11) | E | 10 | 36 | 46 | 18 | 19 | 37 |
| August 20 | 2 - Duck River (44) | M | 41 | 52 | 93 | 20 | 15 | 35 |
| September 4 | 3 - Constantine Harbour (176) | M | 52 | 45 | 97 | 0 | 0 | 0 |
| September 11 | 4 - Sheep Bay (11) | E | 25 | 19 | 44 | 0 | 0 | 0 |
| Total | | | 128 | 152 | 280 | 38 | 34 | 72 |
| 1953 | | | | | | | | |
| July 23 | 5 - Sheep Bay (11) | E | 46 | 52 | 98 | 18 | 16 | 34 |
| July 24 | 6 - Beartrap Bay (20) | E | 27 | 38 | 65 | 18 | 18 | 36 |
| July 25 | 7 - Olsen Bay (23) | E | 29 | 34 | 63 | 17 | 17 | 34 |
| July 27 | 8 - Indian Creek (45) | E | 18 | 27 | 45 | 18 | 17 | 35 |
| August 1 | 9 - Coghill River (83) | M | 13 | 15 | 28 | 17 | 18 | 35 |
| August 4 | 10 - Jackpot Bay (120) | E | 40 | 9 | 49 | 17 | 8 | 25 |
| August 10 | 11 - Olsen Bay (23) | E | 24 | 27 | 51 | 14 | 19 | 33 |
| August 12 | 12 - Constantine Harbour (176) | M | 19 | 10 | 29 | 18 | 8 | 26 |
| August 17 | 13 - Duck River (44) | M | 80 | 44 | 124 | 16 | 19 | 35 |
| August 17 | 14 - Indian Creek (45) | E | 0 | 1 | 1 | 0 | 1 | 1 |
| August 18 | 15 - East Long Bay (58) | M | 4 | 1 | 5 | 5 | 1 | 6 |
| August 18 | 16 - Cedar Bay (63) | L | 2 | 1 | 3 | 2 | 1 | 3 |
| August 19 | 17 - Wells Bay (65) | M | 3 | 3 | 6 | 3 | 3 | 6 |
| August 21 | 18 - Pigot Bay (89) | E | 1 | 8 | 9 | 1 | 6 | 7 |

1/ Number in parenthesis is number assigned by Fish and Wildlife Service to identify streams

Table C-2. --Particulars of measurements and scale samples taken from the Prince William Sound spawning grounds, 1952-1957 -- Continued
( E = Early, M = Middle, L = Late run streams)

| Date | Sample number and location 1/ | Timing | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1953 continued | | | | | | | | |
| August 21 | 19 - Long Bay (100) | L | 49 | 46 | 95 | 19 | 17 | 36 |
| August 22 | 20 - Mink Harbour (102) | L | 1 | 4 | 5 | 1 | 4 | 5 |
| August 24 | 21 - Jackpot Bay (120) | E | 67 | 57 | 124 | 20 | 18 | 38 |
| August 27 | 22 - South Port Chalmers (150) | L | 4 | 2 | 6 | 4 | 2 | 6 |
| August 28 | 23 - Constantine Harbour (176) | M | 44 | 42 | 86 | 18 | 19 | 37 |
| August 31 | 24 - Sheep Bay (11) | E | 13 | 19 | 32 | 12 | 16 | 28 |
| August 31 | 25 - Sheep Bay (12) | M | 48 | 30 | 78 | 18 | 18 | 36 |
| September 2 | 26 - Olsen Bay (23) | E | 37 | 24 | 61 | 19 | 13 | 32 |
| September 2 | 27 - Beartrap Bay (20) | E | 54 | 50 | 104 | 19 | 17 | 36 |
| September 3 | 28 - St. Mathews Bay (26) | M | 5 | 2 | 7 | 4 | 2 | 6 |
| September 3 | 29 - Port Fidalgo (32) | L | 1 | 1 | 2 | 1 | 1 | 2 |
| September 6 | 30 - Long Bay (58) | M | 38 | 17 | 55 | 15 | 13 | 28 |
| September 7 | 31 - Eaglek Creek (73) | M | 16 | 8 | 24 | 16 | 8 | 24 |
| Total | | | 683 | 572 | 1,255 | 330 | 300 | 630 |
| 1954 | | | | | | | | |
| August 16 | 32 - Sheep Bay (11) | E | 19 | 16 | 35 | 18 | 16 | 34 |
| August 22 | 33 - Cedar Bay (63) | L | 9 | 5 | 14 | 0 | 0 | 0 |
| August 24 | 34 - Eaglek Creek (73) | M | 87 | 29 | 116 | 39 | 27 | 66 |
| Total | | | 115 | 50 | 165 | 57 | 43 | 100 |

1/ Number in parenthesis is number assigned by Fish and Wildlife Service to identify streams.

Table C-2. --Particulars of measurements and scale samples taken from the Prince William Sound spawning grounds, 1952-1957 -- Continued
(E = Early, M = Middle, L = Late run streams)

| Date | Sample number and location [1] | Timing | Number of measurements | | | Number of scales | | |
|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total |
| 1955 | | | | | | | | |
| August 21 | 35 - Crab Bay (141) | L | 9 | 8 | 17 | 9 | 8 | 17 |
| September 4 | 36 - Duck River (44) | M | 33 | 41 | 74 | 19 | 19 | 38 |
| Total | | | 42 | 49 | 91 | 28 | 27 | 55 |
| 1956 | | | | | | | | |
| August 16 | 37 - McClure Bay (110) | M | 17 | 21 | 38 | 15 | 14 | 29 |
| August 18 | 38 - Coghill River (83) | M | 53 | 64 | 117 | 18 | 18 | 36 |
| August 19 | 39 - Eaglek Creek (73) | M | 38 | 61 | 99 | 18 | 16 | 34 |
| August 21 | 40 - Cedar Bay (63) | L | 51 | 32 | 83 | 19 | 17 | 36 |
| August 22 | 41 - Long Bay (58) | M | 36 | 43 | 79 | 0 | 0 | 0 |
| August 24 | 42 - Duck River (44) | M | 38 | 55 | 93 | 20 | 18 | 38 |
| August 30 | 43 - Sheep Bay (12) | L | 59 | 69 | 128 | 18 | 17 | 35 |
| August 31 | 44 - Beartrap Bay (20) | E | 33 | 52 | 85 | 18 | 18 | 36 |
| August 31 | 45 - Olsen Bay (23) | E | 35 | 19 | 54 | 0 | 0 | 0 |
| September 9 | 46 - Long Bay (100) | L | 33 | 55 | 88 | 0 | 0 | 0 |
| Total | | | 393 | 471 | 864 | 126 | 118 | 244 |
| 1957 | | | | | | | | |
| August 15 | 47 - Jackpot Bay (120) | E | 55 | 54 | 109 | 55 | 54 | 109 |
| August 17 | 48 - North Pigot Bay (89N) | E | 48 | 52 | 100 | 0 | 0 | 0 |
| August 23 | 49 - Duck River (44) | M | 20 | 22 | 42 | 20 | 18 | 38 |
| August 25 | 50 - Sheep Bay (11) | E | 20 | 20 | 40 | 17 | 16 | 33 |
| Total | | | 143 | 148 | 291 | 92 | 88 | 180 |

1/ Number in parenthesis is number assigned by Fish and Wildlife Service to identify streams.

Table C-3. --Length frequencies of chum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958

| Length by centimeter group (mm.) | Sample No. 1 Montague Island August 6, 1952 | | | | | | Sample No. 2 Port Gravina-Sheep Bay August 12, 1952 | | | | | | Sample No. 3 Unakwik-Port Fidalgo August 12, 1952 | | | | | | Sample No. 4 Montague Strait-Knight Island July 15, 1953 | | | | | | Sample No. 5 Montague Strait-Bainbridge Island July 21, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 555 | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 565 | | | | | | | | | | | | | | | | 1 | | | 1 | | | | 1 | | | | | | | |
| 575 | | | | 1 | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 585 | | | | 1 | | | | | | | | | | | | | 1 | | | 1 | | 1 | 1 | | | | | 1 | 1 | |
| 595 | 3 | | | | | | | | | 1 | 1 | | | | | 5 | | | | 2 | | 1 | 2 | | 1 | | | | 2 | |
| 605 | 1 | | | 1 | | | 1 | | | | | | 2 | 1 | | 1 | 1 | | | 2 | | | 3 | | | 3 | | 1 | 1 | |
| 615 | | | | | 1 | | 3 | 1 | | 1 | 1 | 1 | 2 | | | 2 | | | | 1 | | | 3 | | | | | | 2 | |
| 625 | 3 | 1 | | | 1 | | 3 | 1 | | | 1 | | 1 | 1 | | | | | | 2 | | | 4 | | | 4 | | | 2 | |
| 635 | | 1 | | | 2 | | | 2 | | | 3 | | | 2 | | | 2 | 1 | | 3 | | | 2 | 1 | | 3 | 1 | | 2 | |
| 645 | | | | | 3 | | | 2 | | | 1 | | | 3 | | | | 1 | | | 1 | | | | | 2 | | | 1 | |
| 655 | | 2 | | | 1 | | | | 1 | | 2 | | | 1 | | | | 4 | | 2 | | | | | | 2 | | | 2 | |
| 665 | | 2 | | | 1 | 1 | | 1 | | | | | | 1 | | | | | | | | | | | | | | | 2 | 1 |
| 675 | | 1 | 1 | | 2 | | | 1 | | | | | | | | | | 1 | | | 1 | | | | | 1 | 2 | | | |
| 685 | | | | | 1 | | | | 1 | | | 2 | | 1 | 1 | | | | | 1 | | | | | | | | | | |
| 695 | | | | | | 1 | | 1 | | | 1 | 1 | | | 1 | | | | | | | | | | | | | | | |
| 705 | | 1 | 3 | | | 1 | | 1 | | | | | | | 1 | | | | | 1 | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 725 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 7 | 8 | 5 | 3 | 12 | 3 | 8 | 10 | 2 | 3 | 11 | 4 | 6 | 10 | 3 | 9 | 4 | 7 | 2 | 16 | 2 | 2 | 16 | 1 | 1 | 15 | 3 | 2 | 15 | 1 |

Table C-3. --Length frequencies ofchum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958 --Continued

| Length by centimeter group (mm.) | Sample No. 6 Eshamy Bay August 3, 1953 | | | | | | Sample No. 7 Montague Strait August 5, 1953 | | | | | | Sample No. 8 Port Chalmers - Knight Island Pass August 5, 1953 | | | | | | Sample No. 10 Unakwik Inlet June 27, 1956 | | | | | | Sample No. 11 Port Wells July 10, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | |
| 555 | | 1 | | | | | 1 | | | | | | 2 | | | | | | | | | | | | 1 | 1 | | | 2 | |
| 565 | | | | | 1 | | | | | | | | 1 | | | 1 | 1 | | | | | | | | | | | | 2 | |
| 575 | 1 | 1 | | | | | | 1 | | | | | 1 | | | 1 | | | | | | | | | | 5 | | | 5 | |
| 585 | 2 | 1 | | 3 | 1 | | | | | | | | 2 | | | | 1 | | | | | | 1 | | | 1 | | | 4 | |
| 595 | | 2 | | | 1 | | | | | | | | 2 | 1 | | | 3 | | | | | | 2 | | | 3 | | | 2 | |
| 605 | | | | | 5 | | 2 | 1 | | | 1 | | | 2 | | 1 | 2 | | | | | | 1 | | | 3 | | | | |
| 615 | | 3 | | | | | | 2 | | 1 | 4 | | | | 2 | | 1 | | | | | | | | | 1 | | | 2 | |
| 625 | 1 | 1 | | | 2 | | | 3 | | | 2 | | 1 | | | | 3 | | | | | | | | | 2 | | | | |
| 635 | | | | | 2 | | | | | 1 | 1 | | | | | | 2 | | | | | | | | | | | | | |
| 645 | | | | | 1 | | | 3 | | | 3 | | | 1 | | | 1 | | | | | | | | | | | | | |
| 655 | | 3 | 1 | | 3 | | | 2 | | | 2 | | | | | | | | | | | | | | | | | | | 1 |
| 665 | | 1 | | | | | | 2 | | | 1 | | | 1 | | | | | | | | | | | | | | | | |
| 675 | | | | | | 1 | | 2 | 1 | | 1 | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 5 | 13 | 1 | 3 | 16 | 1 | 3 | 16 | 1 | 2 | 15 | 1 | 9 | 7 | 2 | 3 | 14 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 17 | 0 | 0 | 18 | 1 |

Table C-3. --Length frequencies of chum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958 --Continued

| Length by centimeter group (mm.) | Sample No. 12 MacLeod Harbor--Point Helen July 10-11, 1956 | | | | | | Sample No. 14 Port Wells July 19, 1956 | | | | | | Sample No. 15 Valdez Arm July 19, 1956 | | | | | | Sample No. 16 MacLeod Harbor July 20, 1956 | | | | | | Sample No. 18 Montague Strait-Knight Island Passage July 24, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | 1 | | | | | 1 | | | | 1 | | 1 | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | 1 | | 1 | | |
| 545 | | 2 | | | | | | | | | | | | | | | | | 2 | | | | | | 1 | | | 1 | 1 | |
| 555 | | | | | 1 | | | | | | 1 | | | | | | | | | | | | 3 | | | | | | | |
| 565 | | 1 | | | 3 | 1 | | 2 | | | 3 | | | 2 | | | | | | 1 | | | 1 | | 2 | | | 1 | 2 | |
| 575 | | 1 | 1 | | 3 | | | | | | 1 | | | 1 | | | | | 1 | 1 | | | | | | | | | 2 | |
| 585 | 1 | | | | | | | 2 | | | 4 | | | 1 | | | | | | 1 | | | 4 | | 1 | | | | 6 | |
| 595 | | 5 | | | 2 | | | 4 | | | 2 | | | 2 | | 1 | 2 | | | | | | 5 | | 1 | 1 | | | 2 | |
| 605 | | 1 | | | 3 | | | | | | 3 | | | 1 | | | 4 | | | 1 | | 1 | | | | 1 | | | 3 | |
| 615 | | 4 | | | 1 | | | 1 | | | | | | 5 | | | 4 | | | 2 | | | 1 | | | 3 | | | 1 | |
| 625 | | 1 | | | | | | 2 | | | 2 | | | | | | 1 | | | 4 | | 1 | 1 | | | 3 | | | | |
| 635 | | | | | 2 | | | 3 | | | 1 | | | 1 | | | 1 | | | 2 | | | 1 | | | 1 | | | | |
| 645 | | 1 | | | | | | 2 | | | 1 | | | | | | | | | | | | | | | 1 | | | | |
| 655 | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 665 | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <500 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| >759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 16 | 1 | 0 | 15 | 1 | 0 | 18 | 1 | 0 | 19 | 0 | 0 | 14 | 0 | 1 | 14 | 0 | 5 | 13 | 0 | 2 | 17 | 0 | 7 | 11 | 0 | 3 | 17 | 0 |

Table C-3. --Length frequencies of chum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958 --Continued

| Length by centimeter group (mm.) | Sample No. 19 Hinchinbrook Island Ports Gravina & Fidalgo August 2, 1956 | | | | | | Sample No. 20 New England Fish Co. Ellamar August 3, 1956 | | | | | | Sample No. 21 Valdez Arm-Port Fidalgo August 3, 1956 | | | | | | Sample No. 22 Granite Bay Point August 1-4, 1956 | | | | | | Sample No. 31 Montague Strait-Knight Island Pass July 26, 1957 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | 2 | | | | | | | | | | | | 1 | | | | | | 2 | | | | | | | | | | | |
| 545 | 2 | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 555 | | | | 2 | 1 | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | | |
| 565 | 1 | 1 | | 1 | | | 3 | | | | 1 | | | 1 | | 1 | 1 | | | | | 1 | | | | | | | | |
| 575 | 1 | 1 | | | 1 | | 3 | 1 | | | 2 | | | | | | 1 | | | 2 | | | 2 | | | | | | | |
| 585 | 2 | | | 1 | | | | | | | 1 | | 1 | | | | 1 | | 1 | 2 | | | 6 | | | | | | | |
| 595 | | 1 | | | 1 | | 1 | 1 | | | 4 | | | 3 | | | 2 | | | 1 | 1 | | 1 | | | | | | | |
| 605 | | | | | 2 | | | 2 | | | 1 | | 3 | 1 | | | 4 | | | 2 | | | 3 | | | | | | | |
| 615 | 1 | 1 | | | 2 | | | 1 | | | 2 | | | 2 | | | | | | 2 | | | 1 | | 1 | | | | | |
| 625 | 1 | | | | 3 | | | 1 | | | | 1 | | 4 | | | 1 | | | | | | 4 | | | 1 | | 2 | | |
| 635 | 1 | | | | 2 | 1 | | 1 | | | 1 | | | 2 | | | 6 | | | 3 | | | | | 1 | 1 | | | | |
| 645 | 1 | | | | 2 | | | 1 | | | 4 | 1 | | 1 | | | 1 | | | | | | | | | | | | 1 | |
| 655 | | | | | | | | 2 | | | 1 | | | | | | 1 | | | | 2 | | | | 4 | 3 | | | 2 | |
| 665 | | 2 | | | | | | | | | | | | | | | 1 | | | | | | | | 2 | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 4 | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 695 | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | 4 | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 4 | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <500 | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | |
| >759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 13 | 7 | 0 | 4 | 14 | 1 | 9 | 10 | 0 | 0 | 18 | 2 | 6 | 14 | 0 | 1 | 19 | 0 | 5 | 12 | 3 | 1 | 17 | 0 | 8 | 9 | 2 | 2 | 16 | 1 |

Table C-3. --Length frequencies of chum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958 --Continued

| Length by centimeter group (mm.) | Sample No. 40 Culross Island July 6, 1958 | | | | | | Sample No. 41 Point Helen July 7, 1958 | | | | | | Sample No. 44 Johnstone Point July 12, 1958 | | | | | | Sample No. 45 Point Helen July 14, 1958 | | | | | | Sample No. 52 Johnstone Point August 3, 1958 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | | 1 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| 555 | | | | 1 | | | | | | 1 | | | 2 | | | | | | | | | | | | | | | | | |
| 565 | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | |
| 575 | | | | | | | | | | | | | 1 | | | | 1 | | | | | | 1 | | | | | | 1 | |
| 585 | 1 | 2 | | | 2 | | | | | | | | | | | 1 | 1 | | | | | | | | | 2 | | | 3 | |
| 595 | | | | | 1 | | | | | | | | | | | 2 | 1 | | | | | | | | 1 | 1 | | 1 | | |
| 605 | | 1 | 1 | | 2 | | | | 1 | | 2 | | 1 | 3 | | | 3 | | 1 | | | | 1 | | | 1 | | | | |
| 615 | | 2 | | | | | | | | | | | 2 | | | | | | 1 | | | | 1 | | | 2 | | | 2 | |
| 625 | | 3 | | | 1 | | | 1 | | | | | | 1 | | | | | 2 | | | | | | | 2 | | | | |
| 635 | | 2 | | | 1 | | | 1 | 1 | | | | 1 | 2 | | | 6 | | | 2 | | | | | | 3 | | | 3 | |
| 645 | | 1 | | | | | | | | | | | | 1 | | | | | | 2 | | 1 | 2 | | | | | | | |
| 655 | | | | | | 1 | | | | | 2 | | | 1 | | | | | | 1 | | | 6 | | | | | | | |
| 665 | | | | | | | | | | | | | | | | | | 1 | | 1 | | | 2 | 1 | | 2 | | | | |
| 675 | | 1 | | | | | | | | | | | | 1 | | | 1 | | | 2 | | | 1 | | | | 1 | | | |
| 685 | | | | | | | | | | | | | | 2 | | | | 1 | | | 1 | | 1 | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Total | 1 | 13 | 1 | 1 | 7 | 1 | 0 | 2 | 2 | 1 | 4 | 0 | 7 | 12 | 1 | 4 | 13 | 2 | 5 | 9 | 2 | 1 | 16 | 1 | 1 | 13 | 1 | 1 | 9 | 0 |

Table C-3. --Length frequencies of chum salmon taken in Prince William Sound commercial fishery by age (in years) and sex, 1952-1953 and 1956-1958 --Continued

| Length by centimeter group (mm.) | Sample No. 53 Point Helen August 6, 1958 | | | | | |
|---|---|---|---|---|---|---|
| | Sex and age | | | | | |
| | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | |
| 515 | | | | | | |
| 525 | | | | | | |
| 535 | | | | | | |
| 545 | | | | | | |
| 555 | | | | | | |
| 565 | | | | | | |
| 575 | | | | | 1 | |
| 585 | | 1 | | | | |
| 595 | | 1 | | | | |
| 605 | | 1 | | | 1 | |
| 615 | | 1 | | | | |
| 625 | | 1 | | | | |
| 636 | | | | | 2 | |
| 646 | | 1 | | | | |
| 655 | | | | | | |
| 665 | | | | | | |
| 675 | | | | | | |
| 685 | | | | | | |
| 695 | | | | | | |
| 705 | | | | | | |
| 715 | | | | | | |
| 725 | | | | | | |
| 735 | | | | | | |
| 745 | | | | | | |
| 755 | | | | | | |
| <500 | | | | | | |
| >759 | | | | | | |
| Total | 0 | 6 | 0 | 0 | 4 | 0 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 1 Sheep Bay August 15, 1952 | | | | | | Sample No. 2 Duck River August 20, 1952 | | | | | | Sample No. 5 Sheep Bay July 23, 1953 | | | | | | Sample No. 6 Beartrap Bay July 24, 1953 | | | | | | Sample No. 7 Olsen Bay July 25, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| 555 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 565 | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | |
| 575 | 1 | | | | | | 1 | | | | | | | | | | | | | | | | 1 | | | | | | | 1 |
| 585 | | | | 1 | | | | | | | | | | 1 | | | 2 | | | | | | | | | | | | | |
| 595 | 1 | 1 | | 1 | 1 | | | | | | | | | | | | 2 | | | 2 | | | | | | | | 1 | |
| 605 | | 1 | | | | | | 2 | | | | | | 1 | 1 | | | 1 | | | | | 2 | | | 1 | 1 | | 2 | |
| 615 | | 3 | 1 | | 1 | | | 1 | 1 | | 3 | | | 1 | 1 | | | 2 | | 1 | | | 3 | | | | | | 2 | 1 |
| 625 | | | | | 3 | 2 | 1 | 2 | | | 1 | | | 2 | | | 1 | 1 | | 1 | | | 1 | 1 | | | | | 1 | |
| 635 | | 1 | | | 1 | | | 1 | | | | 1 | | | 1 | | | 1 | | 2 | | | 1 | | | 2 | 1 | | | 1 |
| 645 | 1 | 1 | | | 2 | 1 | | 2 | | | 1 | 1 | | 1 | 2 | | | 1 | | 1 | 1 | | | 1 | | 3 | | | 2 | 1 |
| 655 | | 1 | | | | 1 | | | 1 | | | | | | 1 | | | 2 | | 1 | | | 1 | 2 | | 1 | 1 | | | |
| 665 | | | | | | | | | 3 | | | 2 | | | 2 | | | 1 | | 1 | 1 | | 1 | 1 | | | 2 | | | |
| 675 | | 2 | 1 | | | 1 | | | 3 | | | 2 | | | | | | | | 2 | 1 | | | | | | | | 2 | 1 |
| 685 | | | | | | 1 | | | | | | 2 | | 1 | 1 | | | 2 | | | 1 | | | 1 | | | | | | |
| 695 | | 1 | 1 | | 1 | 1 | | | 2 | | | | | | | | | | | 1 | | | 1 | | | | 1 | | | 1 |
| 705 | | | | | | | | | | | | 1 | | | 1 | | | | | | | | 1 | | | | | | | |
| 715 | | | | | | | | | | | | 1 | | | | | | | | | 2 | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 4 | 11 | 3 | 2 | 9 | 8 | 2 | 8 | 10 | 0 | 5 | 10 | 1 | 7 | 10 | 0 | 5 | 11 | 0 | 12 | 6 | 0 | 12 | 6 | 1 | 8 | 8 | 1 | 10 | 6 |

Table C-4. -- Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 8 Indian Creek July 27, 1953 | | | | | | Sample No. 9 Coghill River August 1, 1953 | | | | | | Sample No. 10 Jackpot Bay August 4, 1953 | | | | | | Sample No. 11 Olsen Bay August 10, 1953 | | | | | | Sample No. 12 Constantine Harbor August 12, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 555 | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | |
| 565 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 575 | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | |
| 585 | | 1 | | | 2 | | | | | | 2 | | | | | | | | | | | | | | | 2 | | | 1 | |
| 595 | | | | 1 | 1 | | | | | | 2 | | | 1 | | | | | | | | | 2 | | | 2 | | | | |
| 605 | | 6 | 1 | | 2 | | | | | | 7 | | | 1 | 1 | | 1 | | | | | | 3 | | | | | | 2 | |
| 615 | | 1 | | | 1 | 1 | | 4 | 1 | | 2 | | | 1 | | | 2 | 1 | | 1 | | | 1 | | | 1 | 1 | | 2 | |
| 625 | | 1 | | | 1 | | | 1 | | | 2 | | | 2 | | | 1 | | | 2 | | | 3 | 1 | | 1 | | | 1 | |
| 635 | | | | | 2 | 1 | | 2 | | | 2 | 1 | | 2 | 1 | | 1 | | | 2 | | | | | | | 1 | | 1 | |
| 645 | | 2 | 1 | | 1 | | | | 1 | | | | | | 2 | | | 1 | | 2 | | | | 2 | | 3 | | | | |
| 655 | | 2 | 1 | | 2 | | | 1 | | | | | | | 1 | | | | | | 1 | | | | | 5 | | | 1 | |
| 665 | | | | | 2 | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | |
| 675 | | | | | | | | 2 | | | | | | | 2 | | | | | | | | | 1 | | 1 | | | | | |
| 685 | | | | | | | | 2 | | | | | | | | | | | | | 2 | | 1 | 1 | | | | | | |
| 695 | | | | | | | | | | | | | | | 2 | | | | | | 2 | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | 2 | | | | | | | | | | | | 1 | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| Total | 2 | 13 | 3 | 1 | 14 | 2 | 0 | 15 | 2 | 0 | 17 | 1 | 0 | 7 | 10 | 0 | 5 | 3 | 0 | 9 | 5 | 1 | 12 | 6 | 1 | 15 | 2 | 0 | 8 | 0 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 13 Duck River August 17, 1953 | | | | | | Sample No. 14 Indian Creek August 17, 1953 | | | | | | Sample No. 15 East Long Bay August 18, 1953 | | | | | | Sample No. 16 Cedar Bay August 18, 1953 | | | | | | Sample No. 17 Wells Bay August 19, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 555 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| 565 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| 575 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 585 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 595 | 1 | | | | 4 | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | |
| 605 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 615 | | 1 | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 625 | | | | | | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| 635 | | | | | 3 | | | | | | | | | 2 | | | | | | | | | | | | 1 | | | | |
| 645 | | 3 | | | 1 | | | | | | | | | 1 | | | 1 | | | 1 | | | | | | | | | 1 | |
| 655 | | 1 | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 665 | | 1 | | | 4 | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 675 | | 1 | | | | 2 | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| < 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| > 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 4 | 10 | 2 | 1 | 14 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 3 | 0 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 18 Pigot Bay August 21, 1953 | | | | | | Sample No. 19 Long Bay August 21, 1953 | | | | | | Sample No. 20 Mink Harbor August 22, 1953 | | | | | | Sample No. 21 Jackpot Bay August 24, 1953 | | | | | | Sample No. 22 South Port Chalmers August 27, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 555 | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | |
| 565 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 575 | | | | | 2 | | | | | | 2 | | | | | | | | | | | | | | | | | | | |
| 585 | | | | | | | | | | | 3 | | | | | | 1 | | | | | | 2 | | | | | | | |
| 595 | | 1 | | | | | | | | | 1 | | | | | | 1 | | | 1 | | | 1 | | | | | | | |
| 605 | | | | | 1 | | | 2 | | | | | | | | | 2 | | | 3 | | | 3 | | 1 | | | | | |
| 615 | | | | | 2 | | | | | | 3 | | | | | | | | | | | | 5 | | | | 1 | | | |
| 625 | | | | | | | | | 1 | | 2 | | | | | | | | | 3 | 1 | | 1 | | | | | | | |
| 635 | | | | | | | | 2 | | | 3 | | | | | | | | | 5 | | | 3 | | | | | | | |
| 645 | | | | | | | | 2 | | | 2 | | | | | | | | | 2 | | | 1 | | | | | | | |
| 655 | | | | | | | | 4 | 2 | | | | | | | | | | | 1 | | | | | | | | | | |
| 665 | | | | | | | | 1 | 1 | | | | | 1 | | | | | | 1 | | | 1 | | | 1 | | | 1 | 1 |
| 675 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | 3 | | | | | | | | | | | | 1 | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 15 | 4 | 0 | 17 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 2 | 17 | 1 | 0 | 18 | 0 | 2 | 1 | 1 | 0 | 1 | 1 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 23 Constantine Harbor August 28, 1953 | | | | | | Sample No. 24 Sheep Bay August 31, 1953 | | | | | | Sample No. 25 Sheep Bay August 31, 1953 | | | | | | Sample No. 26 Olsen Bay Sept. 2, 1953 | | | | | | Sample No. 27 Beartrap Bay Sept. 2, 1953 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 545 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 555 | | | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | |
| 565 | | | | | | | | | | | 1 | | | | | | | | | 2 | | 1 | | | | | | | | |
| 575 | | 1 | | | 2 | | | | | | 2 | | | | | | | | | | | | | | | | | | 1 | |
| 585 | | | | | 1 | | | | | | 3 | | | 2 | | | | | 1 | | | | | | | | | | | |
| 595 | | 1 | | | | | | | | | 3 | | | | | | | | | 1 | | | 1 | | | | | | | |
| 605 | | 2 | | | 5 | | | | | | 1 | | | 3 | | | 2 | | | 2 | | | 3 | | | 3 | | | 5 | |
| 615 | | 1 | | | 2 | | | | | | 2 | | | 2 | | | 1 | | | 1 | | | 2 | | | 2 | | | 1 | |
| 625 | | 1 | | | 7 | | | | | | 1 | | | 5 | 1 | | 3 | | | 2 | | | 4 | | | 3 | | | | |
| 635 | | 1 | | | 1 | | | | | | 1 | | | 1 | | | 1 | | | 2 | | | 1 | | | 2 | 1 | | 2 | |
| 645 | | 1 | | | | | | 4 | | | 1 | | | | | | 2 | | | 4 | 1 | | | | | 1 | | | 2 | 1 |
| 655 | | 2 | | | | | | 1 | | | | | | 1 | | | 1 | 1 | | 1 | | | | | | 2 | 1 | | 3 | |
| 665 | | 2 | | | 1 | | | | | | | | | | 1 | | 4 | | | | | | | | | 2 | | | 1 | |
| 675 | | 2 | | | | | | 2 | | | | | | 1 | | | | 1 | | 1 | | | | | | | | | | |
| 685 | | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | |
| 695 | | | | | | | | 2 | | | | | | | | | 1 | 1 | | | | | | | | | | | | |
| 705 | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 16 | 1 | 0 | 19 | 0 | 1 | 10 | 1 | 0 | 16 | 0 | 1 | 15 | 2 | 0 | 15 | 3 | 1 | 17 | 1 | 2 | 11 | 0 | 0 | 17 | 2 | 0 | 16 | 1 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 28 St. Mathews Bay September 3, 1953 | | | | | | Sample No. 29 Port Fidalgo September 3, 1953 | | | | | | Sample No. 30 Long Bay September 6, 1953 | | | | | | Sample No. 31 Eaglek Creek September 7, 1953 | | | | | | Sample No. 32 Sheep Bay August 16, 1954 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | | 2 | 1 | | | | | | | | | | |
| 545 | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | |
| 555 | | | | | | | | | | | | | | | | | | | 2 | 1 | | 1 | | | | | | | | |
| 565 | 1 | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | |
| 575 | | | | | | | | | | | | | | | | | | | 1 | 1 | | | 1 | | | | | | 1 | |
| 585 | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | |
| 595 | 1 | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | |
| 605 | | | | | | | | | | | | | 2 | | | | | | | 1 | | | 1 | | | | | | 1 | |
| 615 | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | |
| 625 | | 2 | | | 1 | | | | | | | | | 2 | | 3 | 1 | | | 2 | | | 1 | | | | | | | |
| 635 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | |
| 645 | | | | | | | | | | | 1 | | | 5 | | 2 | | | | 1 | | | | | | | 1 | | 3 | 1 |
| 655 | | | | | | | | | | | | | | | 1 | 3 | | | | | | | 1 | | | 4 | | | 3 | |
| 665 | | | | | | | | 1 | | | | | | 2 | | | | | | | | | | | | 2 | 1 | | 3 | |
| 675 | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 | |
| 685 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | 2 | | 1 | 2 |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - |
| Total | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 11 | 2 | 0 | 12 | 1 | 9 | 7 | 0 | 1 | 7 | 0 | 0 | 11 | 7 | 0 | 13 | 3 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 34 Eaglek Creek August 24, 1954 | | | | | | Sample No. 35 Crab Bay August 21, 1955 | | | | | | Sample No. 36 Duck River September 4, 1955 | | | | | | Sample No. 37 McClure Bay August 16, 1956 | | | | | | Sample No. 38 Coghill River August 18, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 525 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 535 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 545 | 2 | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 555 | 2 | | | 2 | 1 | | | | | | | | 1 | | | | | | | | | | 1 | | | 1 | 1 | | | |
| 565 | 5 | | | 3 | | | | | | | | | 1 | | | | | | | 1 | | | 3 | | | | | | 1 | |
| 575 | 5 | 1 | | 2 | | | | | | 1 | | | 1 | 1 | | | | | | 1 | | | 2 | | | | | | 2 | |
| 585 | 2 | | | 2 | 1 | | | | | | 1 | | 1 | 1 | | | | | | 1 | | | 4 | | | 1 | | | 3 | |
| 595 | 4 | 2 | | 2 | 1 | | | | | | | | | 3 | | | 1 | | | 2 | | | 2 | | | 1 | | | 4 | |
| 605 | | 1 | | 1 | 3 | | | | | | | | | | | 1 | 2 | | | 2 | | | | | 1 | 2 | | | | |
| 615 | 4 | | | 1 | 2 | | | 1 | | | 1 | 1 | | 1 | | | 3 | | | 5 | | | 1 | | | 2 | | | 2 | |
| 625 | | 2 | | | 1 | | | 2 | | | 1 | | | 1 | | | 3 | | | 2 | | | 1 | | | 3 | | | 3 | |
| 635 | | | | | 1 | | | | | | 1 | | | 1 | 1 | | 3 | | | | | | | | | | | | 1 | |
| 645 | | 1 | | | 1 | | | | | | | | | 2 | | | 3 | | | 1 | | | | | | 1 | 1 | | 2 | |
| 655 | | | | | | | | 1 | | | 1 | | | 1 | | | 2 | | | | | | | | | | | | | |
| 665 | | 1 | | | | | | | | | | 1 | | 2 | | | | | | | | | | | | 2 | 1 | | | |
| 675 | | | | | | | | 2 | 1 | | | | | | | | | | | | | | | | | 1 | | | | |
| 685 | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | |
| 695 | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 715 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 30 | 9 | 0 | 15 | 12 | 0 | 0 | 8 | 1 | 1 | 5 | 2 | 4 | 14 | 1 | 1 | 18 | 0 | 0 | 15 | 0 | 0 | 14 | 0 | 2 | 14 | 2 | 1 | 17 | 0 |

Table C-4--. Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 39 Eaglek Creek August 19, 1956 | | | | | | Sample No. 40 Cedar Bay August 21, 1956 | | | | | | Sample No. 42 Duck River August 24, 1956 | | | | | | Sample No. 43 Sheep Bay August 30, 1956 | | | | | | Sample No. 44 Beartrap Bay August 30, 1956 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 515 | | 2 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 525 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| 535 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 545 | | 1 | | | 1 | | | 5 | | | | | 1 | | | | 2 | | | | | | | | | | | | | |
| 555 | | 2 | | | 1 | | | | | | 2 | | | | | | 1 | | | | | | 1 | | | 1 | | | | |
| 565 | | 1 | 1 | | 3 | | | 3 | | | 1 | | | 1 | | | | | | | | | | | | | | | 1 | |
| 575 | | 1 | | | 2 | | | 2 | | | 1 | | | 2 | | | 1 | | | 1 | | | 1 | | | | | | 3 | |
| 585 | | 2 | | | 2 | | | | | | 6 | | 1 | 4 | | | | | | 1 | | | 2 | | | 1 | | | | |
| 595 | | 3 | | | 3 | | | 2 | | | 2 | | | 2 | | | 1 | | | | | | | | | 2 | | | 5 | |
| 605 | | 2 | | | 2 | | | 2 | | | 1 | | | 6 | | | 3 | | 3 | 1 | 1 | 4 | | | 2 | | | 4 | | |
| 615 | | | | | 2 | | | 1 | | | 2 | | | | | | 2 | | 2 | 1 | | 2 | | | 3 | | | 2 | | |
| 625 | | 1 | | | | | | 1 | | | 1 | | | | | | 1 | | 4 | | | 1 | | | 4 | | | | | |
| 635 | | | | | | | | 2 | | | | | | 2 | | | 2 | | 2 | | | | | | 2 | | | | | |
| 645 | | | | | | | | 1 | | | | | | | | | 2 | | | | | | | | 2 | | | | 1 | |
| 655 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 2 | | |
| 665 | | | | | | | | | | | | | | | | | 2 | | 1 | | | 2 | | | 1 | | | | | |
| 675 | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 715 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ≤500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ≥759 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 16 | 1 | 0 | 16 | 0 | 0 | 19 | 0 | 0 | 17 | 0 | 3 | 17 | 0 | 0 | 18 | 0 | 1 | 14 | 3 | 1 | 16 | 0 | 0 | 18 | 0 | 0 | 17 | 1 |

Table C-4. --Length frequencies of chum salmon taken from the Prince William Sound spawning grounds by age (in years) and sex, 1952-1957 --Continued

| Length by centimeter group (mm.) | Sample No. 47 Jackpot Bay August 15, 1957 | | | | | | Sample No. 49 Duck River August 23, 1957 | | | | | | Sample No. 50 Sheep Bay August 25, 1957 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex and age | | | | | | | | | | | | | | | | | |
| | Male | | | Female | | | Male | | | Female | | | Male | | | Female | | |
| | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 5 |
| 505 | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | | | | | |
| 545 | | 1 | | | | | | 1 | | | | | | | | | | |
| 555 | | 1 | | | 1 | | | | | | | | | | | | | |
| 565 | | 1 | | | 3 | | 2 | | | | | | | | | | | |
| 575 | | 2 | | | 7 | | 1 | | | | | | 1 | | 1 | | 1 | |
| 585 | | 3 | | | 6 | 1 | | | | 1 | | | | | | | 1 | |
| 595 | | 4 | | | 9 | 1 | | | | | | | | | | | | |
| 605 | | 4 | 2 | | 8 | | | 1 | | | 1 | | | 2 | 1 | | 1 | 1 |
| 615 | | 5 | 2 | | 6 | 1 | | 3 | | | 2 | | | 2 | | | | 1 |
| 625 | | 5 | 2 | | 3 | 2 | | 2 | 1 | | 3 | | | 1 | 1 | | | 1 |
| 635 | | 14 | 1 | | 2 | | | 3 | 1 | | 2 | | | 1 | | | 1 | 1 |
| 645 | | 1 | | | 1 | 1 | | 3 | | | | | | 2 | | | | 1 |
| 655 | | 2 | 2 | | | | | 1 | | | 1 | 3 | | 1 | 1 | | | 2 |
| 665 | | | | | | 2 | | | | | 3 | | | 1 | 1 | | | 2 |
| 675 | | | | | | | | | | | | | | 1 | | | | 2 |
| 685 | | | 3 | | | | | | 1 | | 1 | | | | | | | |
| 695 | | | | | | | | | | | | | | | | | 1 | |
| 705 | | | | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | 1 | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | |
| 735 | | | | | | | | | | | | | | | | | | |
| 745 | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | |
| < 500 | | | | | | | | | | | | | | | | | | |
| > 759 | | | | | | | | | | | | | | 1 | | | | |
| Total | 0 | 43 | 12 | 0 | 46 | 8 | 3 | 14 | 3 | 1 | 13 | 4 | 1 | 11 | 5 | 0 | 5 | 11 |

Table C-5. Chum salmon sex ratios for the Prince William Sound area commercial catch, 1952-53 and 1956-58

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1952 | | | | |
| August 6 | 1 - Montague Island | 56 | 92 | 148 |
| August 12 | 2 - Port Gravina-Sheep Bay | 82 | 100 | 182 |
| August 12 | 3 - Unakwik-Port Fidalgo | 20 | 13 | 33 |
| Total | | 158 | 205 | 363 |
| Percent | | 43.5 | 56.5 | 100.0 |
| 1953 | | | | |
| July 15 | 4 - Montague Strait-Knight Island | 62 | 100 | 162 |
| July 21 | 5 - Montague Strait-Bainbridge Island | 70 | 99 | 169 |
| August 3 | 6 - Eshamy | 22 | 50 | 72 |
| August 5 | 7 - Montague Strait | 61 | 100 | 161 |
| August 5 | 8 - Port Chalmers-Knight Island Passage | 44 | 74 | 118 |
| Total | | 259 | 423 | 682 |
| Percent | | 38.0 | 62.0 | 100.0 |
| 1956 | | | | |
| June 25 | 9 - Galena Bay | 5 | 0 | 5 |
| June 27 | 10 - Unakwik Inlet | 0 | 4 | 4 |
| July 10 | 11 - Port Wells | 50 | 39 | 89 |
| July 10-11 | 12 - MacLeod Harbor-Point Helen | 50 | 39 | 89 |
| July 16-17 | 13 - Montague Strait-Knight Island Passage | 30 | 42 | 72 |
| July 19 | 14 - Port Wells | 50 | 45 | 95 |
| July 19 | 15 - Valdez Arm | 15 | 16 | 31 |
| July 20 | 16 - MacLeod Harbor | 42 | 50 | 92 |
| July 20 | 17 - Valdez Arm | 29 | 38 | 67 |
| July 24 | 18 - Montague Strait-Knight Island Passage | 23 | 50 | 73 |
| August 2 | 19 - Hinchinbrook Island-Ports Gravina and Fidalgo | 50 | 42 | 92 |
| August 3 | 20 - New England Fish Co.-Ellamar | 46 | 50 | 96 |
| August 3 | 21 - Valdez-Port Fidalgo | 22 | 20 | 42 |
| August 1-4 | 22 - Granite Bay Point | 23 | 20 | 43 |
| Total | | 435 | 455 | 890 |
| Percent | | 48.9 | 51.1 | 100.0 |

Table C-5. Chum salmon sex ratios for the Prince William Sound area commercial catch, 1952-53 and 1956-58 -- Continued

| Date | Sample number and location | Male | Female | Both |
|---|---|---|---|---|
| 1957 | | | | |
| July 8 | 23 - Point Helen | 53 | 46 | 99 |
| July 9 | 24 - Point Helen | 13 | 13 | 26 |
| July 11 | 25 - Culross Island | 5 | 4 | 9 |
| July 13-14 | 26 - Porcupine Point | 25 | 17 | 42 |
| July 14 | 27 - Freemantle Point | 45 | 25 | 70 |
| July 21 | 28 - Bainbridge Point | 12 | 8 | 20 |
| July 22 | 29 - North Twin Bay | 2 | 2 | 4 |
| July 23 | 30 - Point Elrington | 4 | 7 | 11 |
| July 26 | 31 - Montague Strait-Knight Island Passage | 50 | 40 | 90 |
| July 28 | 32 - MacLeod Harbor | 24 | 27 | 51 |
| July 31 | 33 - Kiniklik Point | 6 | 0 | 6 |
| August 3 | 34 - Gravina Point | 26 | 11 | 37 |
| August 4 | 35 - Porcupine Point | 61 | 54 | 115 |
| August 8 | 36 - Point Elrington | 13 | 17 | 30 |
| August 10-11 | 37 - Bainbridge Point | 15 | 29 | 44 |
| August 12 | 38 - MacLeod Harbor | 2 | 0 | 2 |
| August 13 | 39 - Zaikof Bay | 1 | 0 | 1 |
| Total | | 357 | 300 | 657 |
| Percent | | 54.3 | 45.7 | 100.0 |
| 1958 | | | | |
| July 6 | 40 - Culross Island | 15 | 11 | 26 |
| July 7 | 41 - Point Helen | 10 | 15 | 25 |
| July 8 | 42 - Point Helen | 13 | 21 | 34 |
| July 9 | 43 - Point Freemantle | 11 | 15 | 26 |
| July 12 | 44 - Johnstone Point | 38 | 42 | 80 |
| July 14 | 45 - Point Helen | 23 | 27 | 50 |
| July 15 | 46 - Point Elrington | 3 | 12 | 15 |
| July 16 | 47 - Point Elrington | 1 | 0 | 1 |
| July 20 | 48 - Point Freemantle | 107 | 83 | 190 |
| July 23 | 49 - Johnstone Point | 37 | 33 | 70 |
| July 29 | 50 - Kiniklik Point | 13 | 14 | 27 |
| July 30 | 51 - Point Freemantle | 34 | 29 | 63 |
| August 3 | 52 - Johnstone Point | 20 | 10 | 30 |
| August 6 | 53 - Point Helen | 9 | 5 | 14 |
| August 7-8 | 54 - Point Elrington | 1 | 2 | 3 |
| Total | | 334 | 320 | 654 |
| Percent | | 51.1 | 48.9 | 100.0 |

Table C-6. Chum salmon sex ratios for the Prince William Sound spawning grounds, 1952-57

| Date | Sample number and location 1/ | Male | Female | Both |
|---|---|---|---|---|
| 1952 | | | | |
| August 15 | 1 - Sheep Bay (11) | 10 | 36 | 46 |
| August 20 | 2 - Duck River (44) | 39 | 50 | 89 |
| September 4 | 3 - Constantine Harbour (176) | 50 | 13 | 63 |
| September 11 | 4 - Sheep Bay (11) | 25 | 19 | 44 |
| Total | | 124 | 118 | 242 |
| Percent | | 51.2 | 48.8 | 100.0 |
| 1953 | | | | |
| July 23 | 5 - Sheep Bay (11) | 46 | 52 | 98 |
| July 24 | 6 - Beartrap Bay (20) | 27 | 38 | 65 |
| July 25 | 7 - Olsen Bay (23) | 30 | 34 | 64 |
| July 27 | 8 - Indian Creek (45) | 18 | 23 | 41 |
| August 1 | 9 - Coghill River (83) | 13 | 15 | 28 |
| August 4 | 10 - Jackpot Bay (120) | 40 | 9 | 49 |
| August 10 | 11 - Olsen Bay (23) | 24 | 27 | 51 |
| August 12 | 12 - Constantine Harbour (176) | 19 | 10 | 29 |
| August 17 | 13 - Duck River (44) | 80 | 44 | 124 |
| August 17 | 14 - Indian Creek (45) | 0 | 0 | 0 |
| August 18 | 15 - East Long Bay (58) | 4 | 1 | 5 |
| August 18 | 16 - Cedar Bay (63) | 2 | 1 | 3 |
| August 19 | 17 - Wells Bay (65) | 3 | 3 | 6 |
| August 21 | 18 - Pigot Bay (89) | 1 | 8 | 9 |
| August 21 | 19 - Long Bay (100) | 49 | 46 | 95 |
| August 22 | 20 - Mink Harbour (102) | 1 | 4 | 5 |
| August 24 | 21 - Jackpot Bay (120) | 67 | 57 | 124 |
| August 27 | 22 - South Port Chalmers (150) | 4 | 2 | 6 |
| August 28 | 23 - Constantine Harbour (176) | 44 | 42 | 86 |
| August 31 | 24 - Sheep Bay (11) | 13 | 19 | 32 |
| August 31 | 25 - Sheep Bay (12) | 48 | 30 | 78 |
| September 2 | 26 - Olsen Bay (23) | 37 | 24 | 61 |
| September 2 | 27 - Beartrap Bay (20) | 54 | 50 | 104 |
| September 3 | 28 - St. Mathews Bay (26) | 5 | 2 | 7 |
| September 3 | 29 - Port Fidalgo (32) | 0 | 0 | 0 |
| September 6 | 30 - Long Bay (58) | 38 | 16 | 54 |
| September 7 | 31 - Eaglek Creek (73) | 16 | 8 | 24 |
| Total | | 683 | 565 | 1,248 |
| Percent | | 54.7 | 45.3 | 100.0 |

1/ Number in parenthesis is number assigned by Fish and Wildlife Service to identify streams.

Table C-6. Chum salmon sex ratios for the Prince William Sound spawning grounds, 1952-57 -- Continued

| Date | Sample number and location [1/] | Male | Female | Both |
|---|---|---|---|---|
| 1954 | | | | |
| August 16 | 32 - Sheep Bay (11) | 19 | 16 | 35 |
| August 22 | 33 - Cedar Bay (63) | 9 | 5 | 14 |
| August 24 | 34 - Eaglek Creek (73) | 87 | 29 | 116 |
| Total | | 115 | 50 | 165 |
| Percent | | 69.7 | 30.3 | 100.0 |
| 1955 | | | | |
| August 21 | 35 - Crab Bay (141) | 9 | 8 | 17 |
| September 4 | 36 - Duck River (44) | 33 | 41 | 74 |
| Total | | 42 | 49 | 91 |
| Percent | | 46.1 | 53.9 | 100.0 |
| 1956 | | | | |
| August 16 | 37 - McClure Bay (110) | 16 | 14 | 30 |
| August 18 | 38 - Coghill River (83) | 48 | 58 | 106 |
| August 19 | 39 - Eaglek Creek (73) | 40 | 61 | 101 |
| August 21 | 40 - Cedar Bay (63) | 50 | 32 | 82 |
| August 22 | 41 - Long Bay (58) | 34 | 45 | 79 |
| August 24 | 42 - Duck River (44) | 38 | 55 | 93 |
| August 30 | 43 - Sheep Bay (12) | 57 | 73 | 130 |
| August 31 | 44 - Beartrap Bay (20) | 20 | 20 | 40 |
| August 31 | 45 - Olsen Bay (23) | 35 | 19 | 54 |
| September 9 | 46 - Long Bay (100) | 31 | 58 | 89 |
| Total | | 369 | 435 | 804 |
| Percent | | 45.9 | 54.1 | 100.0 |
| 1957 | | | | |
| August 15 | 47 - Jackpot Bay (120) | 59 | 60 | 119 |
| August 17 | 48 - North Pigot Bay (89N) | 70 | 62 | 132 |
| August 23 | 49 - Duck River (44) | 20 | 22 | 42 |
| August 25 | 50 - Sheep Bay (11) | 20 | 20 | 40 |
| Total | | 169 | 164 | 333 |
| Percent | | 50.7 | 49.3 | 100.0 |

MS #1218



GPO 931164

Created in 1849, the Department of the Interior--America's Department of Natural Resources--is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.